August 2023 Volume 148 Number 1113

The Naturalist

Yorkshire Naturalists' Union

Journal of Natural History for the North of England

Yorkshire Naturalists' Union

The Naturalist

Vol. 148 No. 1113 August 2023

Contents

Page

Stratigraphy, dates and insect faunas from the Lateglacial site at Barmston, East Yorkshire* 81
J. Derek Allen, Mark D Bateman, Paul C. Buckland, Philip I. Buckland, Dan Hartmann, G. Russell Coope

Aquatic plants along the Yorkshire River Derwent 99
R. Goulder

John Ray, Yorkshire and the Johnson brothers 108
Frank Horsman

Additions and corrections to the Yorkshire Diptera list (part 11) 110
Andrew Grayson

YNU Bryological Section: Report for 2022 T.L. Blockeel 113

Walrus in Scarborough Harbour: with notes on other occurrences in the North Sea Colin A. Howes 120

Things that go tweet in the night: nocturnal monitoring of birds 124
William Scott & Graham Scott

Yorkshire Naturalists' Union AGM Day 131

The Story of Old Moor - Part 2 Eric Bennett 132

Update on spider recording in Watsonian Yorkshire (2020 - 2022)* 136
Richard Wilson

John Newbould awarded the British Empire Medal 146

Yorkshire Heteroptera – Part 4: Cimicomorpha 3 – Miroidea, Miridae – Orthoytylinae and Phylinae Stuart Foster 147

Notable records of leaf-mining moths in East Yorkshire, 2021 and 2022 155
Andy D. Nunn

YNU Calendar 2023 160

An asterisk * indicates a peer-reviewed paper

Front cover: The spider *Nigma walckenaeri* mating pair (male at bottom). See p145. Photo: Geoff Oxford

Back cover: YNU Entomologists at Brockadale.

The Naturalist

Stratigraphy, dates and insect faunas from the Lateglacial site at Barmston, East Yorkshire

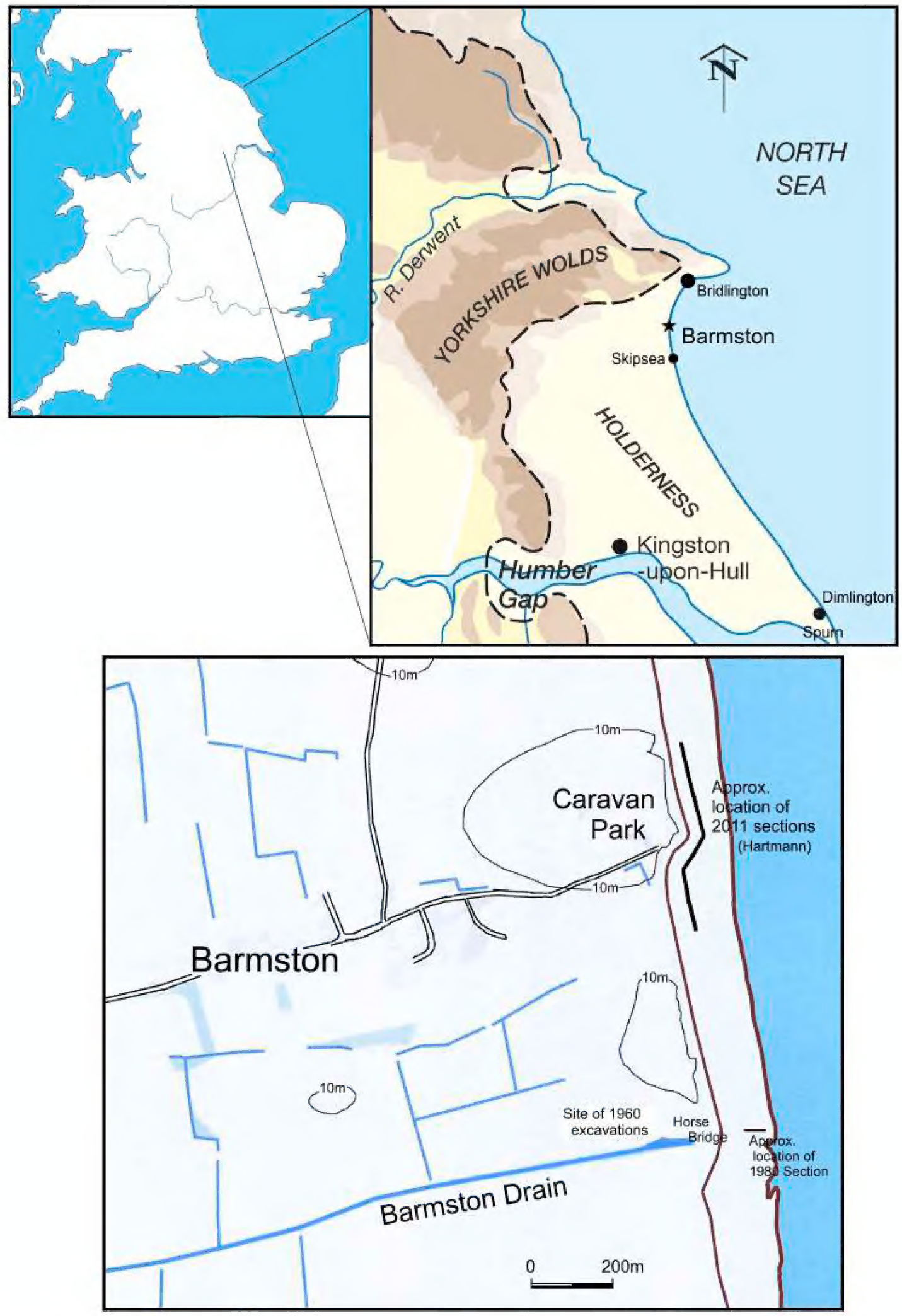
J. Derek Allen, Mark D Bateman, Paul C. Buckland, Philip I. Buckland, Dan Hartmann, G. Russell Coope†

Derek Allen, Cantley Lane, Doncaster, S. Yorks, DN4 6ND.
Mark D. Bateman, Department of Geography, University of Sheffield, Sheffield, S10 5TN
Paul C. Buckland, 20 Den Bank Close, Crosspool, Sheffield, S10 5PA.
Philip I. Buckland, Institutionen för idé-och samhällsstudier, Umeå Universitetet, Umeå, Sweden, S-90 187.
Dan Hartmann, Department of Geography, University of Sheffield, Sheffield, S10 5TN.
G. Russell Coope, Department of Geological Sciences, Birmingham University, Edgbaston, Birmingham, B15 2TT.

Email: paul.buckland@bugscep.com

Introduction

Late Quaternary deposits on the Yorkshire coast southwards from Sewerby Cliff in Bridlington Bay to Dimlington north of Spurn Point (Figs. 1a-1c, p82) have been the subject of stratigraphic and palaeontological research for well over a century (Bateman *et al*., 2011; Catt, 2007 and references therein, Evans *et al*., 1995). The region contains the type-site for the Last Glacial Maximum (LGM) in Britain at Dimlington (Rose, 1985) and extensive outcrops of at least three glacial diamicts, locally the Basement, Skipsea and Withernsea Tills, indicating the dynamic nature of the North Sea ice lobe during the final stages of the British and Irish Icesheet (BIIS). Work by Bateman *et al*. (2015) indicates that the Skipsea and Withernsea Tills represent ice sheets that were present across Holderness for less than 6 ka between 20.9 and 15.1 ka BP before retreating north and east. However, the deglaciation remains insufficiently constrained, with a hiatus between the preserved glacial deposits and the earliest Lateglacial sequences at Gransmoor and Roos Bog (Walker *et al*., 1993; Beckett, 1981). Organic sediments directly overlying glacial till have been examined at Barmston which provide additional evidence of Lateglacial environments and climate in Holderness. This paper presents fossil insect and chronological evidence from coastal exposures from which climatic reconstructions can be made.



Figures 1a-1c. Location maps of the Barmston Drain site, based on OS data.

Previous Research

Peat deposits exposed adjacent to the Barmston Drain (at TA172586), 1km east of the village and 9km south of Bridlington (Figs.1 a-c), were first noted in 1880 by the drainage engineer, Thomas Boynton, during enlargement of a channel to take headwaters of the River Hull directly eastwards to the North Sea (Sheppard, 1958). The principal interest of the peat lay in the Bronze Age and later archaeology (Smith, 1911; Varley, 1968; Van de Noort, 1995), but some aspects of its palaeoecology were also examined.

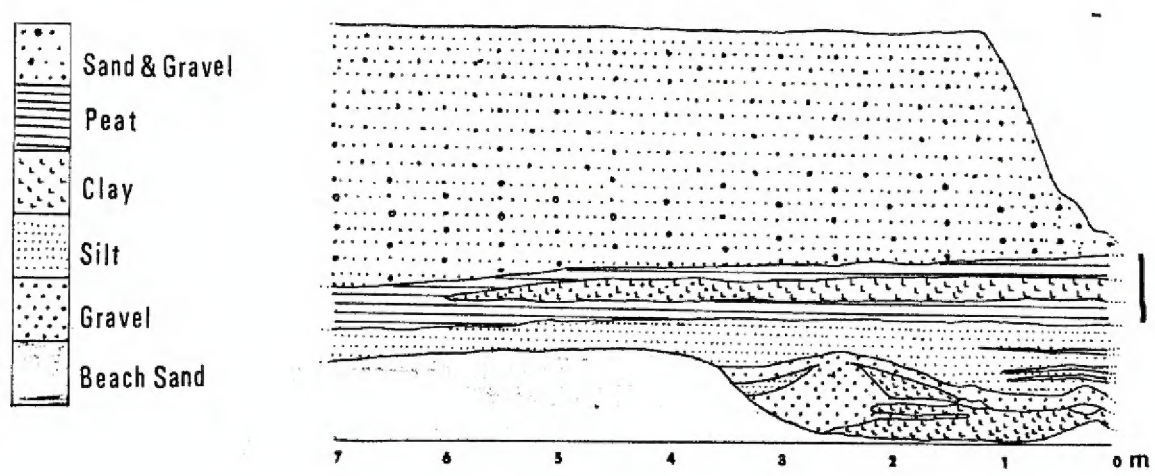


Figure 2. West-east section on the north side of the Barmston Drain, east of Horse Bridge, recorded in 1980 (JDA).

Extensive freshwater and terrestrial molluscan faunas were recovered from a 'shell bed' at Barmston during the 1940s and published by Boylan (1966). There is, however, some confusion as to where the material came from since his grid reference (TA170576) suggests a locality ~650m to the south, north of Ulrome village, whilst his description suggests that the samples came from close to the outfall of the Barmston Drain. The stratigraphy of a north-south section recorded in 1961 by Varley (1968, Fig. 6) indicates that organic sediments, a 'silty clay rich in molluscs', extended beneath the archaeological deposits. Boylan (1966) clearly regarded this as the same deposit, and this was sampled directly for ostracods by Robinson (1972). Bridger (1977) drew the north-south coastal section for the International Union for Quaternary Research (INQUA) visit in that year and also noted a 'shelly clay.' In 1980, the section at the drain end, approximately at right angles to Bridger's, was recorded by Allen (1980) and sampled for insect remains. Rapid coastal erosion has resulted in additional north-south sections which were recorded by Evans *et al.* (1995) and Hartmann (2011).

The Stratigraphy

By 1980, the exposures in the drain section were largely overgrown and continued coastal erosion had exposed organic sediments in the low cliff north of Horse Bridge, the site of a concrete sluice (Fig. 3, p84) at the end of the Barmston Main Drain (NGR TA17155862). The site lay at the end of a short spur of the cliff approximately 50m north of the outfall and approximately 100 m east of Horse Bridge. At the time of sampling, in summer 1980, the cliff was about 3 m high with a peat bed exposed at the base, partly hidden by blown beach sand and slumped material from the overlying sediments. The north side of this transient cliff feature was cleaned and recorded as a west-east section (Fig. 4, p84). In 1994, the Humber Wetlands Project group cut test pits immediately adjacent to Varley's 1960-1 excavation obtaining samples for additional radiocarbon dates (Bayliss & Dinnin, 1995, Table 3) and also examined the colluvium overlying the peat deposits (Lillie, 1995). In the 42 years since the sampling for insect remains, further erosion has moved the coastline back close to the site of the bridge and deposits are now largely obscured by coarse rock debris dumped in an attempt to protect the sluice at the mouth of the drain (Fig. 4, p84).

Figure 3. Barmston Drain end (Sept. 2015). View looking north-westwards from the site of Horse Bridge across the small peat-filled basin examined by Varley (1968). The site sampled in 1980, now destroyed by coastal erosion lay to the right of the picture.

Figure 4. East-west eroded coastal section immediately north of the rock cladding around the mouth of the Barmston Drain (Nov. 2010). The section shows Skipsea Till at beach level overlain by laminar bedded silts and clay dipping gently westwards towards the centre of the basin. These are overlain by sub-horizontally bedded sands and gravel with some cross-bedded units. This unit fines upwards and is extensively disturbed by cryoturbation below the modern ground surface.

Examining the geological sequence at the site and its immediate area is complicated by the presence of the Drain, which has been re-cut on several occasions over the last two centuries. In addition, Varley's south-north cross-section is schematic (Varley, 1968, fig. 6) and Bridger's (1977, fig. 6) longer section northwards along the cliff from Barmston Drain insufficiently detailed. Varley's (1968, figs. 5, 6) plan and section show peat underlain by gravel in a channel or basin, eroded through laminated clay-silts and cutting into the underlying Skipsea Till (*sensu* Catt, 2007), the whole sealed by 'hillwash' (= colluvium of Lillie, 1995). A clay with frequent freshwater mollusc remains (cf. Boylan, 1966) occurs between the peat and basal gravel. Bridger's section (1977, fig. 5) was coastal and lay further east. Organic sediments are shown on the southern edge of his drawing and although the vertical exaggeration makes it difficult to interpret, these are probably the same as those recorded in more detail by Allen (1980). The remainder of Bridger's section shows the Skipsea Till overlain by 'silts and clays' beneath sands and gravels. The silts and clays appear to be the lateral equivalent of the 'varves' noted by Varley (1968) and are probably the same as those noted during fieldwork in 2015 (Fig. 4). They were studied by Rushworth (1998), whose careful measurements indicate that the rhythmites probably represent varves. The contact between these clay-silts and overlying sands and gravels is irregular and much disturbed and this is interpreted as evidence for both dewatering and cryoturbation (Fig. 5). Varying dips and microfaulting (Fig. 6) suggest that the laminated deposits were initially laid down over ice which then melted out creating a kettlehole. Further sections to the north (Fig. 1, p82), recorded by Hartmann (2011), do not include organics and show contorted sands and gravels directly over till. At Allen's (1980) sampling locality peat and

organic silts are overlain by nearly two metres of poorly sorted sand and gravel (Fig. 2 p83, Table 1 below). These appear to have been derived by reworking of older deposits and probably constitute a solifluction flow into the channel, although there may be some conflation with late Holocene colluvium (cf. Lillie, 1995) in the upper part of the section. This flow of coarser material from the slight ridge to the north sealed the sampled deposits and probably diverted any flow from the west to create the basin into which the Holocene sequence recorded by Varley (1968) was deposited. Although there are no direct stratigraphic links, the radiocarbon dates on the deposits recorded by Allen in 1980 indicate that they are earlier than those examined by Varley and re-excavated by the Humber Wetlands Unit in 1994 (van de Noort, 1995). Whilst Bridger's (1977) coastal section indicates that organic silts and peat along the line of the Barmston Drain are later than the rhythmites, it remains uncertain how the latter relate to similar deposits exposed to the north and Hartmann's (2011) dates either side of a laminated clay-silt unit may relate to a different basin. Figure 7 (p88) summarizes the stratigraphic and dating evidence.

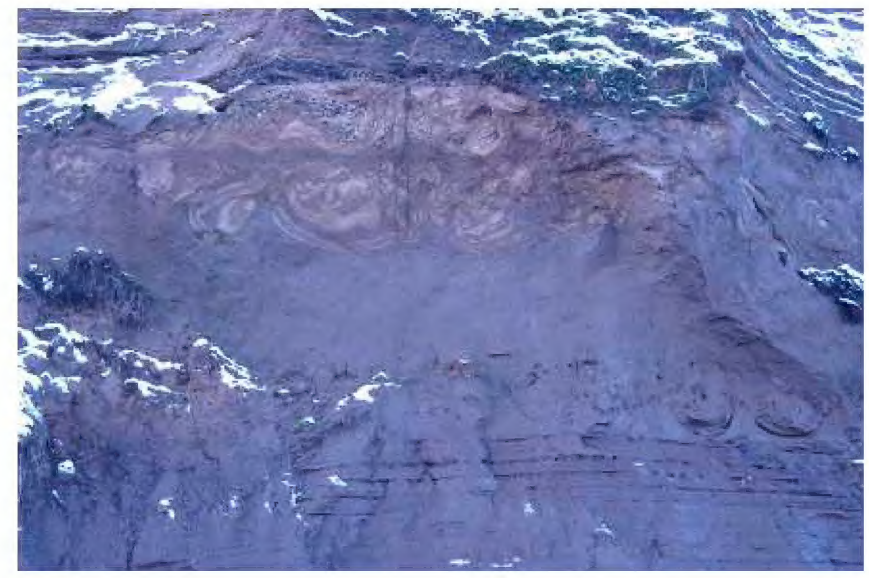


Figure 5. Barmston. Section north of drain showing the upper part of the laminar bedded clay-silts with festoons probably caused by dewatering and gravels cryoturbated into the top of the deposits also showing as festoons (Nov. 2010).

Table 1: The sedimentary sequence at Barmston Drain (after Allen 1980)

Bed thickness	Bed description	Sample
0.7 m	Coarse sand with small cobbles.	
1.0 m	Coarse sand with pebbles.	
0.05 m	Peat.	
0.15 m	Silty clay with pebbles.	
0.15 m	Peat.	
0.2 m	Yellowish sand/silt.	
0.35 m	Grey silt	
0.1 m	Gravel.	
0.25 m	Sandy clay.	
0.5 m	Top 11,260 ± 340 (age in years) Peat Base 12,100 ± 355	S1 (0-10cm) S5 (40-50cm)
1.0 m	Coarse sandy gravel with some clay and shells.	S6 (0-10cm) S7 (10-15cm)
>	Coarse sandy gravel	

The lowest part of Allen's section lay below the level of the beach and the section log (Table 1,

p85) recorded during sampling does not accord entirely with the section (Fig. 2, p83), drawn the same year on a different occasion; erosion and dumping of heavy rock debris to protect the drain outfall has since made this section inaccessible. The difference in the detailed log, however, relates largely to the presence of discontinuous silty clay lenses within the peat unit. The exact thickness of the coarse sandy gravel which overlies the Skipsea Till at this precise location is unknown since Allen did not reach the Skipsea Till in his beach exposure. Although Bridger (1977) stated that the gravel rarely exceeded 0.3 m in thickness, it is probable that it is the lateral equivalent of the sand and gravel unit beneath the laminated units of Bateman *et al*. (2015) and Evans *et al*. (1995), interpreted as the southward equivalent of the glacio-fluvial Sewerby Gravels (Bateman & Catt, 1996; Bateman *et al*., 2015). The grey shelly clay above the gravel was up to a metre thick, becoming silty upwards and the shells in it are spread throughout but tend to be more abundant towards the base. The contact with the underlying gravels is irregular, perhaps as a result of dewatering or cryoturbation. Upwards, there is a gradation from the silt to the lower peat bed which is up to 60cm thick. At the western end of the section this compact, dark brown peat forms a single unit, but eastwards it is divided by lenses of sandy clays, gravels and silts, varying in colour, texture and thickness, above which are two lenses of sandy peat, each c. 0.15m thick. The organic deposits extended westwards for at least 15m, dipping slightly southwards indicating that the centre of the basin lay to the south, probably where the present drain is located. The upper part of the section consists of over 1.5m of coarse unbedded sand with pebbles and small cobbles, which appears to have an erosional contact with the underlying deposits.

Figure 6. Barmston Drain. Base of laminar bedded clay-silts north of drain outfall at beach level. The varved units overlie thin-bedded sands and coarse gravels and shows varying dips up to 10° to the west towards the midpoint of the basin (Sept. 2015).

Radiocarbon dates were obtained for the base and top of the lower peat bed in the section exposed in 1980: 12,100 ± 355 BP (=14,135 ± Cal 539 BP) and 11,260 ± 340 BP (= 13,126 ± 314 Cal BP) respectively (Table 1, p85); both dates are on unidentified wood samples. Work by the Humber Wetlands Unit in 1994, intended to place the earlier archaeological work into a securely dated context, included the re-excavation of a section through the deposits examined

by Varley (van de Noort, 1995). Two dates were obtained on humin content of peat at the base of the sequence: 10,720 ± 110 (= 12,647 ± 77 Cal BP) and 10,190 +/- 110 (= 11,862 ± 30 Cal. BP) (Bayliss & Dinnin, 1995). These place the lower part of the sequence close to the Lateglacial / Early Holocene boundary. Subsequent work (DH), on coastal sections to the north of the Drain, closer to the caravan park, provided OSL dates for both the underlying Skipsea Till and sand and gravel units below and over the varved sediments (Harttman, 2011; Evans *et al*., 2021). The dates over the varves, however, (see Table 3) overlap with the radiocarbon dates from channels demonstrably eroded through the OSL dated gravels (Fig. 7, p88), and the latter may relate to a later basin.

Table 3. Radiocarbon and OSL dates from Barmston.

Lab. No.	Age (yrs BP)	Calibrated Age (yrs BP)	Material	Source	Stratigraphy
BM-123	2890 ± 150	3063 ± 183	Wood	Barker & Mackey 1963	Bronze Age structure
BM-122	2960 ± 150	3130 ± 185	Wood	Barker & Mackey 1963	Bronze Age structure
GU-5449	10190 ± 110	11862 ± 30	peat humic acid fraction	Bayliss & Dinnin 1995	Base of fen peat
GU-5448/50	10720 ± 110	12647 ± 77	peat humin fraction	Bayliss & Dinnin 1995	Base of fen peat
Gx-5636	11260 ±340	13126 ± 314	Wood	Allen 1980	S1 (Top of peat)
Gx-5635	12100 ± 355	14135 ± 539	Wood	Allen 1980	S5 (Base of peat)
Shfd-10213	12000 ± 700		OSL	Hartmann 2011, revised Evans *et al.* 2021	Over rhythmites
Shfd-10216	12200 ± 600		OSL	Hartmann 2011, revised Evans *et al.* 2021	Beneath rhythmites
Shfd-10214	17600 ± 1400		OSL	Hartmann 2011, revised Evans *et al*. 2021	Sewerby Gravel equivalent
Shfd-10215	23600 ± 1900		OSL	Hartmann 2011, revised Evans *et al*. 2021	Sewerby Gravel equivalent
Shfd-17500	17500 ± 1400		OSL	Hartmann 2011, revised Evans *et al*. 2021	Sewerby Gravel equivalent

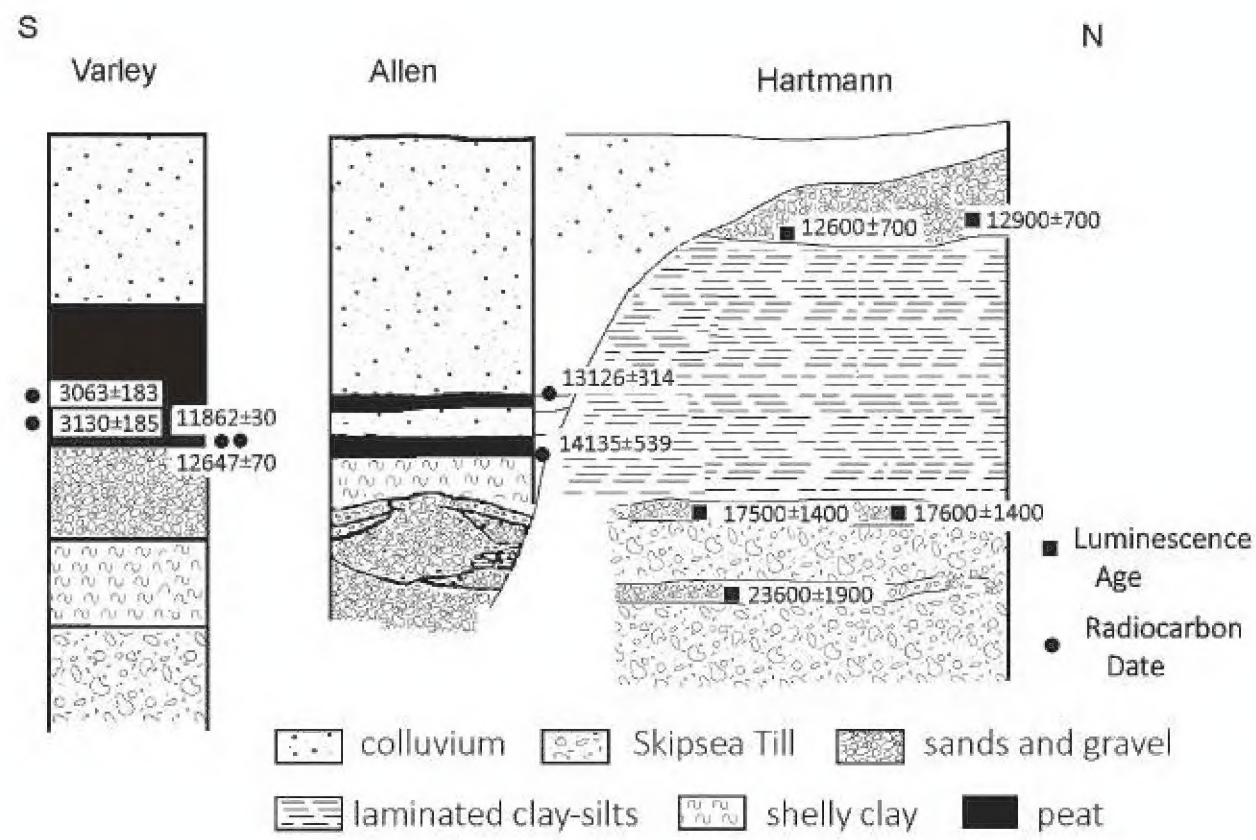


Figure 7. Schematic diagram showing the stratigraphic relationships between Varley, Allen and Hartmann's sections and calibrated radiocarbon and OSL dates.

The Insect Samples

In 1980, Allen took a column of six samples from a vertical face at the base of the cliff section. These samples, each 10cm thick (S1-S6) and ~ 10kg in weight, were taken through the peat and silt deposits to the underlying clay. These were sealed in polythene bags and returned to the laboratory for analysis. An additional sample of the clay (S7) of ~2kg was taken for molluscan analysis and this also yielded insect remains. Part of a fish skeleton was excavated from the peat in a monolith taken at the same time and a number of scales were also found 10cm lower at the peat/clay interface. These have been identified as 'perch like' (Nowell, pers. comm. to J. D. Allen, 1980).

In the laboratory, four samples were processed utilising the paraffin flotation technique devised by Coope and Osborne (1968), Three 10kg samples were processed, one (S1) from the top of the lower peat (40-50cm above the clay-peat contact), one from the base of the peat 0-10cm above the clay) (S5), and another (S 6) from 0-10cm below the peat. A further ~2kg sample (S7) from 10-15cm below the peat was examined. The compact nature of the peat required the sample to be soaked in hot water and sodium hexametaphosphate as a deflocculant. Identification of insect sclerites was done by Coope using reference collections at Birmingham University and published keys but no record survives of the number of individuals of each taxon. Molluscs from the shelly clay beneath the peat were identified by the late F. W. Shotton at Birmingham, and seeds, collected from the samples during the recovery of insect remains, by J. R. A. Grieg, using modern reference material in the Department of Plant Biology at Birmingham University. Taxonomy for Coleoptera follows Böhme (2005), molluscs Anderson and Rowson (2020) and plants Stace (2010).

The environmental implications of the faunas (Full list in Table 3 available on the YNU website at: https://www.ynu.org.uk/about-the-ynu/publications/download-page/category/9-appendices)

Sample S7 The small size of ~2kg, rather than the 10 kg of the other samples restricts interpretation. The molluscs suggest clean oxygenated water, with *Gyraulus laevis* preferring ponds and lakes and *Valvata piscinalis* is ubiquitous in clear or slow-moving waters over a fine-grained substrate (Davies, 2008). Among the insects, the larvae of the alder fly, *Sialis* sp., are predatory in the silt of ponds, lakes and slow-flowing rivers (Elliott, 1996). Of the two species of water beetle identified, *Hygrotus inaequalis* occurs in water bodies rich in vegetation (Nilsson & Holmén, 1995), whilst the more mobile Agabus arcticus prefers larger ponds, lakes and the slower moving parts of rivers with marginal vegetation. Largely upland in Britain, it occurs as far south as the Peak District (Foster & Friday, 2011). Several of the staphylinids may be littoral or riparian. *Eucnecosum brachypterum* is also an upland species in the British Isles, again extending southwards to the Peak (Ardron, 1999), and occurring in plant litter and moss, usually near water (Campbell, 1984), where *Lesteva longelytrata* and species of *Stenus* also occur. The byrrhids, *Simplocaria semistriata* and *Byrrhus* sp., feed on mosses. The one weevil, *Rhamphus* sp., includes species, which develop in mines on the leaves of Rosaceae, willows and birches (Rheinheimer & Hassler, 2010).

Sample S6 (upper level of the clay 0-10cm below the peat/clay boundary)
This more extensive fauna, including the larger dytiscids, *Colymbetes* and *Acilius* spp and the whirligig beetles *Gyrinus aeratus* and *G. marinus*, again indicates the presence of open water. *Nebrioporus assimilis* is flightless and prefers lakes and rivers with sandy beds (Nilsson & Holmén, 1995). *Ochthebius* spp. and *Hydraena riparia* live in wet mud adjacent to water and *Chaetarthria seminulum* burrows in wet mud at the water's edge. The ground beetles *Bembidion prasinum, Epaphius rivularis* and *Loricera pilicornis*, are all riparian to some extent. The first is characteristic of shingle alongside rivers (Luff, 1998). *E. rivularis* is recorded from both wet litter in birch, willow or alder carr and upland raised mires (Lindroth, 1985; Luff, 1998) and *L. pilicornis* is a fairly eurytopic predator on Collembola, occurring in gardens and pasture as well as woods (Luff, 1998). The remaining carabid *Calathus erratus*, on the other hand, prefers dry sandy gravel with a sparse vegetation cover (Luff, 1998). The staphylinids are indicative of moss and plant litter. *Eucnecosum brachypterum* is joined by other omaliines. *Acidota crenata* lives in wet moss (Campbell, 1982), *Olophrum assimile* is restricted in Britain to a few mountain top locations in the north (Hyman, 1994) and similarly occurs in wet litter. *Pycnoglypta lurida* is no longer present in Britain but was almost ubiquitous in the cooler parts of the Lateglacial (Buckland & Buckland, 2006) and is widespread in birch and willow litter in Lapland. The phytophages are better represented in Sample S6. The weevil *Eubrychius velutus* is aquatic, feeding on *Myriophyllum*, water milfoil, spending most of its life submerged (Dieckmann, 1972). The species of the chrysomelid genus *Macroplea* have also been recorded on water milfoil, but also occur on pondweeds, *Potamogeton* spp. *Bromius obscurus* is oligophagous on various Oenotheraceae, principally *Chamerion angustifolium,* Rosebay Willowherb. In Britain it was rediscovered at a locality on the Cheshire Staffordshire border (Kendall, 1981) but is now more widespread in the county and has recently been found in North Lincolnshire (Barnes, 2021) and near Grangemouth in Stirlingshire (Stenhouse, 2021). It is widespread on its main host across the cool temperate and subarctic Holarctic (Lindroth, 1957) and further south it may be a pest on vines (Dillon & Dillon, 1972); it is a common component of Lateglacial assemblages from

Britain (Buckland & Buckland, 2006).

Sample S5 (the lowest level of the peat bed, 0 – 10 cm above the peat/clay boundary)
This was the most diverse of the faunas examined, *Agabus arcticus* is confined to upland lakes and ponds in Britain, extending south to the Peak District, and the weevils *Otiorhynchus nodosus* and *Notaris aethiops* are also upland, extending from the Pennines into Scotland. *O. nodosus* is eurytopic and polyphagous (Böcher, 1988), whilst *N. aethiops* is oligophagous on wetland grasses, sedges and reeds (Koch, 1992); Morris (2002) associates it with the bur-reed, *Sparganium erectum.* Most of the remaining fauna indicates wetlands with some open water and some flow. *Limnobaris dolorosa* is a marshland species, feeding on various sedges, the larvae developing on the roots (Koch, 1992). Floating weed is represented by an extensive weevil fauna. *E. velutus* is supplemented by *Phytobius leucogaster*, which also feeds on water milfoils, and *Bagous* sp., which feed on pondweeds and other aquatic plants. *Pelenomus comari* is a wetland weevil, oligophagous on a range of marsh plants. The Chrysomelidae are also diverse in this sample. Species of *Donacia* and *Plateumaris* feed on reeds, wetland sedges and grasses, and *Prasocuris phellandrii* on wetland Apiaceae, the larvae feeding on *Caltha palustris* (Koch, 1992). The small ladybird *Nephus redtenbacheri* is a predator on aphids often in swamps, and the small brachypterid *Kateretes pusillus* is found on the flowers of grasses and sedges in marshland (Koch, 1989). Some indication of the flora away from the pond is provided by *Galeruca tanaceti*, which feeds on a range of Asteraceae, particularly *Tanacetum vulgare* and *Achillea millefolium* (Koch, 1992), and the bark beetle *Scolytus ratzeburgi* is found only on tree birch. The range of dytiscids and gyrinids suggest the presence of open pools, whilst many of the Hydrophilidae including *Coelostoma orbiculare* and *Hydrobius fuscipes* prefer more vegetated waters. Two of the species of Dryopidae, *Elmis aenea* and *Limnius volckmari*, indicate moving water, although both could have been washed in during a flood, or they derive from a stream flowing into the main pool. Without a count of number of individuals or identification to the species level, it is impossible to evaluate the scarabaeid, *Aphodius*, but it may suggest the presence of the dung of large herbivores. This lack of quantification unfortunately also prevents an accurate indication of the presence of grazing animals in the environs.

Sample S1 (the peat 40-50 cm above the peat/clay boundary)
The final sample from the top of the peat lens, whilst indicating a general continuity of habitat, contains species which indicate a shift to colder, probably more continental conditions. Although the proportion of the aquatic fauna has increased, the actual water beetle fauna has declined and only one whirligig, *Gyrinus marinus*, remains, implying some open water. A biodiversity-based habitat reconstruction also suggests an increase in wetland/marsh type habitats (Fig. 8). *Agabus congener* is generally typical of bog conditions rather than fen or open water, whilst *Helophorus sibiricus*, no longer found in Britain, occurs in grassy pools, especially from snow melt and at the margins of rivers in northern Scandinavia eastwards to Siberia (Angus, 1973). The carabid *Bembidion transparens* is also not now found in Britain, occurring in vegetation on lake shores in mainland Europe, Siberia and North America (Lindroth, 1963). *Pelophila borealis* is restricted in Britain to a locality in the Scottish Highlands, Orkney and the Shetlands (Luff, 1998) and is strongly hygrophilous occurring on mud beside pools with dense marginal vegetation. Two species of staphylinid no longer found in Britain are typical of Lateglacial assemblages. *Olophrum boreale* is widespread in the Scandinavian mountains, extending eastwards across Siberia to North America, living in leaf litter, particularly of *Salix* at the edge of ponds, lakes and streams (Campbell, 1983). *Boreaphilus henningianus* similarly

occurs in leaf litter and mosses in the Arctic and southwards in the mountains (Brundin, 1934). There are few phytophages in the fauna and only *Bromius obscurus*, feeding largely on Rosebay Willowherb, has a specific plant host.

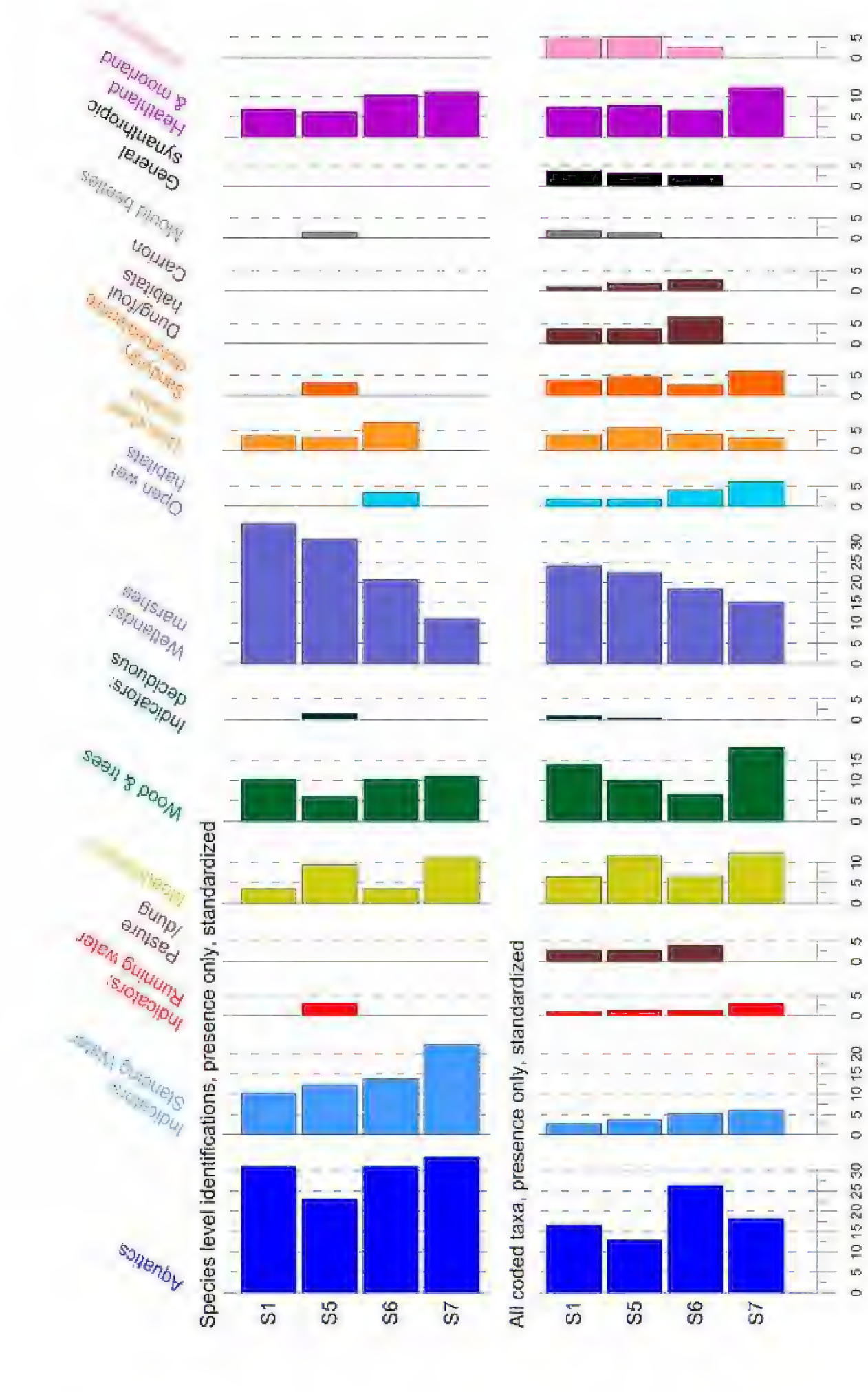


Figure 8. Biodiversity based habitat reconstruction based on the classification of taxa to ecological groups. The size of the bars indicates the relative importance of species indicating a particular habitat for each sample in proportion to the sum of habitat indications. A taxon may be present in more than one habitat class, and indicator classes (e.g. Indicators: Standing Water) are not included in the sum. This scaling allows the environmental implications of sample faunas to be compared irrespective of variation in the number of taxa between samples. The upper grouping includes only fossils identified to species level, and thus a stricter reconstruction than the lower, which includes genus level identifications. The reconstruction was created using the BugsCEP software (Buckland & Buckland 2006).

Summary of the environmental implications of the faunas

The faunal sequence at Barmston suggests a small lake, pond or stream backwater, with pondweed and water milfoil, surrounded by sedges and grasses with mosses and some shrubs, which progressively silted up, with peat accumulation intermittently taking over from clay-silt deposition. This is indicated in the quantitative environmental reconstruction by the increase in the proportion of wetland/marsh species between samples and the progressive decrease in indicators of standing water (Fig. 6, p86). When all taxa are considered, this trend is supported by similar decreases in running water indicators and genera preferring open wet habitats. Around this, a landscape of birch and willow woodland with an undergrowth of heathland vegetation, and scattered meadow-like patches is suggested. Tree birch was present towards the top of the sequence, although it is only strongly indicated in S5, a sample which suggests a milder climate conducive to a higher biodiversity. The S1 fauna interestingly does not provide a mutual climate range with 100% overlap of the 17 species used for the reconstruction, and a jack-knife analysis indicates that no single species can be removed in order to provide this, which would suggest a cohesive fauna plus a single incidental species. This suggests that either the faunal unit is mixed, representing a period of climate change more rapid than the resolution of the sample, or that the resolution of the species thermal envelopes may be an issue; improvements to the calibration data are undoubtedly necessary.

Overall, the climate was slightly colder than the present as there are a number of northern species throughout the sequence; the topmost sample, with several species no longer found in Britain, clearly implies conditions cooler than those below. The quantitative climate reconstruction (MCR, Fig. 9) supports this interpretation to an extent, with the MCR fauna of S1 indicating a probability of colder summers (12 to 16°C) than samples S5 and S6 (15 to 17°C and 15 to 16°C respectively). S1 suggests a narrower range of potential winter temperatures (-12 to -3°C) than the other samples, including a lower upper range limit. This should not, however, be considered as proof of colder conditions than S7, due to the low number of MCR species (four) in the latter fauna.

Discussion

Detailed correlation between the work in 1960-1 (Varley, 1968), 1977 (Bridger, 1977), 1980 (Allen, 1980), and 2009-10 (Hartmann, 2011) relies on the radiocarbon and luminescence ages (Table 2, Fig. 7). With the exception of Allen's, all profiles show a basal diamicton, the Skipsea Till of sources other than Evans and Thomson (2010), who prefer the less prescriptive term LFA1 (lithofacies association 1) as defined in their paper (see also Evans *et al.*, 1995). In Varley's (1968, fig. 6) somewhat schematic north-south section across the depression north of the Barmston Drain, 150 m west of the bridge, the till is overlain directly by 1.5m of 'varves'. Later deposits, including a basal 'Shell-bed' and Bronze Age structures, are shown as infilling a channel eroded through these into the underlying till. This sequence was confirmed by the re-excavation of this site for radiocarbon samples in 1994 (van de Noort, 1995, 331). However, Allen's (1980) section to the east cannot be directly correlated with that of Varley (1968).

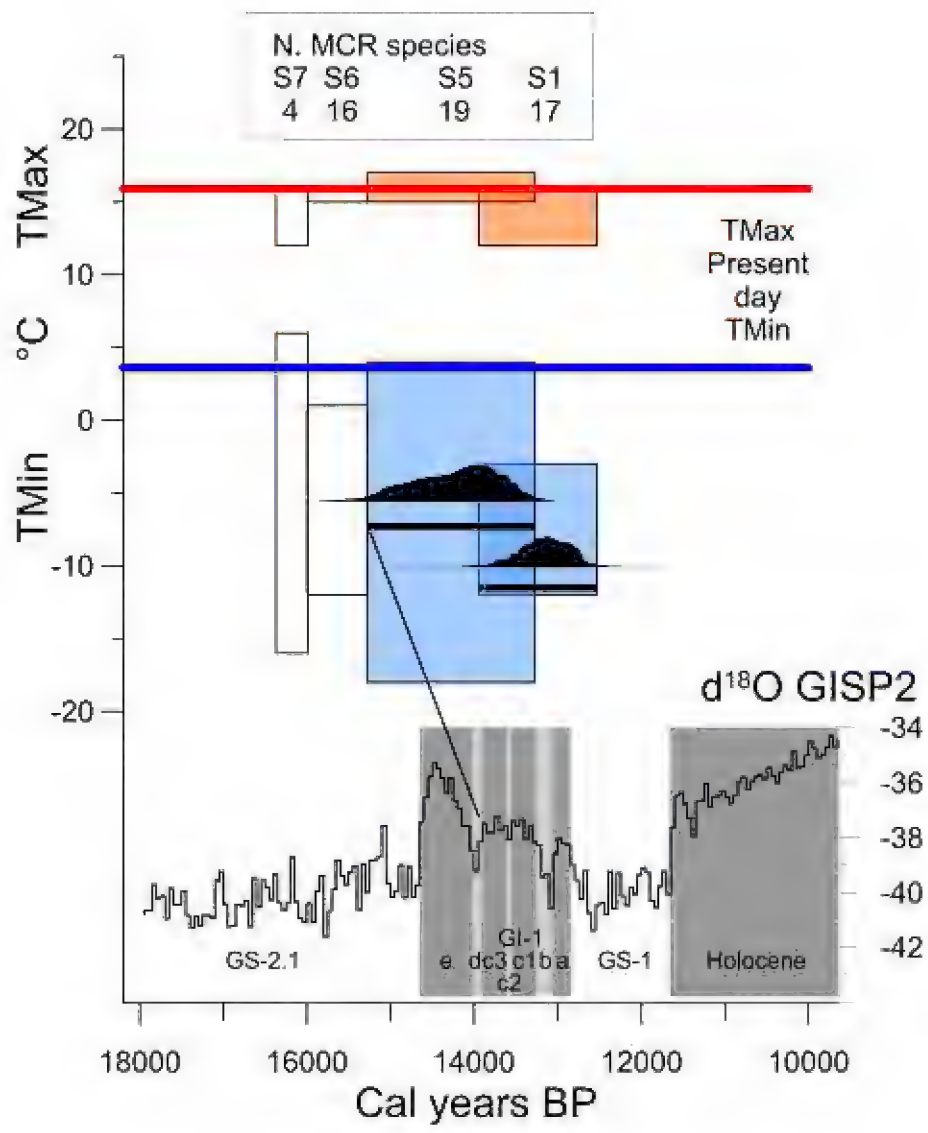


Figure 9. Mutual Climatic Range (MCR) temperature reconstruction of the Barmston faunas, plotted with ^{14}C dates on samples 1 and 5 and $\delta^{18}O$ data from the GISP2 Greenland ice core. TMax is the mean temperature of the warmest month and TMin the mean temperature of the coldest month. The reconstruction was created using the BugsCEP software (Buckland & Buckland 2006) using the method published in Atkinson *et al.* (1986) and revised by Buckland (2007). The faunas and stratigraphy would indicate that the base of the peat is more recent than GI-1d and that the sequence ends before GS-1 and this is indicated by the oblique line on the diagram.

The absence of *Gyraulus laevis* from Boylan's (1966) abundant molluscan faunas, if not edaphic, suggests a different age for his material. Bridger (1977) recorded a similar sequence to Allen (1980) at the southern edge of his section (1977, fig. 5). At that time, however, most of the cliff-line exposed laminated clay-silts ('varved clays'), resting on an irregular surface of Skipsea Till and overlain in part by sands and gravels, which partly infilled channels. Although not apparent in his drawing, Bridger (1977) noted a discontinuous gravel over the till. In the 2015 coastal section (Fig. 4) further north, outside the basin containing the laminated clay silts, the gravels become thicker, including both laminar and cross-bedded units, and can be interpreted as the lateral equivalent of the Sewerby Gravels of Bateman & Catt (1996). Whilst earlier workers described the laminated clay-silts as horizontal, the 2015 exposure dipped at a maximum of 10° to the west, towards the deepest point in the basin in the modern topography. The exposures show sand laminae to 50 mm in thickness, dewatering structures, particularly towards the base, and micro-faulting (Figs. 5, 6). The upper contact with overlying gravels is often disturbed by cryoturbation structures and small frost wedges. The stratigraphy is best explained as a result of initial deposition over a buried block of dead ice, which later melted allowing the deposits to subside into a kettlehole, similar to those recorded at Gransmoor (Walker *et al.*, 1993) and Skipwith (Gilbertson, 1984). Sands and gravels forming the upper part of the sequence in Bridger's coastal section are channelled and cross-bedded and are disturbed by ice wedges. Northwards towards the slight headland (Fig. 1), gravels above and below the clay-silts coalesce to form a single unit, before being divided by further laminated deposits laid down in a separate basin extending both along the coast and inland. As the coast has eroded westwards, the gravels show evident festoons, resulting from cryoturbation into the laminated clay silts (Fig. 5). The sections at the mouth and along the Barmston Drain, however, are less

easily interpreted as previous recording did not differentiate between the two gravels.

The two radiocarbon dates on wood from the section sampled for insect remains not only confirm the Lateglacial age of the organic deposits but also constrain the age of deglaciation of East Yorkshire (Bateman *et al.*, 2015; Evans *et al.*, 2021). It is apparent from the stratigraphy that by the earlier date on the peat of 14,135 ± 535 Cal BP any remaining buried ice had melted, and deposition occurred in a series of basins roughly along the line of the Barmston Drain. This date is similar to the oldest accepted dates from the Gransmoor kettlehole, which also centre on ~14 ka calibrated (Walker *et al.*, 1993). Four older dates from Gransmoor, from 0.6 m of laminar bedded sands and silts, have been rejected because of possible hard water error (Lowe *et al.*, 1994), although in view of subsequent luminescence ages from sites on the coast (Bateman *et al.*, 2015; Evans *et al.*, 2021), any of these could be correct. The Gransmoor deposits, whose insect faunas show a rapid transition from arctic cold to warmer than present day (Lowe *et al.*, 1995, fig. 1), had already accumulated before the melting out of buried ice and subsequent collapse, creating the basin in which later deposits built up. At Barmston, a similar sequence of subsidence after melt-out is indicated but the sequence is complicated by the unfossiliferous laminated clay-silt sequence, which Rushworth's (1998) meticulous counting suggests accumulated in approximately 400 years. A luminescence age from below a similar laminated unit some 500 m to the north is consistent with an age from a sand lens within the Skipsea Till of 23.6 ± 1.9 ka (Table 2) and luminescence ages of 12.6 ± 0.7 ka and 12.9 ± 0.7 ka from the overlying sands and gravels, partly intruded into them by cryoturbation, overlaps with the radiocarbon dates of 12647 ± 77 Cal BP and 11862 ± 30 Cal. BP on the base of the channel obtained by Bayliss and Dinnin (1995). Their dated section, a re-excavation of that of Varley (1968), lacks any solifluction deposits over the Lateglacial organic sediments, and it is probable that the dates reflect the earliest Holocene sedimentation. It is unfortunate that Boylan's (1966) clearly Holocene mollusc faunas cannot be directly related to the Barmston Drain site. In addition, the Bronze Age structures, with calibrated radiocarbon dates at the beginning of the fourth millennium BP, lay directly on the 'shell-bed' (Varley, 1968, fig. 10). Although Varley did not record any detail of the underlying stratigraphy, the shell-bed is directly overlain by a cobbled surface and cut through by archaeological features, and rests on an irregular surface of gravels. Subsequent peat growth then incorporated the Bronze Age woodwork before 'plough-wash' (= colluvium of Lillie, 1995) infilled the basin. The recording is insufficiently precise, but it seems probable that the archaeology reflects exploitation of wetland resources, and the structures were built on the hardstanding provided by the gravel.

Although Bridger's (1977) coastal section can be correlated with the 1980 sampling site, there is no clear stratigraphic relationship between the 1980 and 2010 sections, and it remains uncertain how the dates obtained by Hartmann (2011) some 500m to the north relate to the basins recorded by Varley (1968) and Bridger (1977). Careful splitting of the laminated clay-silts along bedding planes in the 2016 coastal exposure, north of the Barmston Drain, produced little evidence of bioturbation or ichnofauna, in contrast with the similar deposits at Dimlington (Bateman *et al.*, 2011). In addition, washing out of a five litre block of the deposits through a 300µm mesh and examining the ~10cc of coarse residue under a low power microscope failed to produce any macrofossils. It is unlikely that such sterile deposits could have been laid down during the Lateglacial when other local basins show a continuous organic record from the end of the LGM into the Holocene. The laminated deposits may therefore date from the terminal cold phase of the LGM, when annual freeze-thaw cycles favoured varved deposition.

Broader correlation is hampered by the large standard deviations of the two radiocarbon dates from the 1980 section. Figure 9 (p93) plots the dates and MCR evidence against the GISP2 $\delta^{18}O$ Greenland ice core data for the relevant part of the Late Devensian and early Holocene (Rasmussen *et al.*, 2014). The dates range from GS-2.1 to GS-1, but the insect faunas clearly preclude correlation with the initial warming of GI-1e, when temperatures exceeding those of present day are indicated by MCR reconstructions (Atkinson *et al.*, 1987). Such an episode of ~ 750 years could correlate with the melting out of buried ice leading to the collapse of the basin and the beginning of organic sedimentation at Barmston. The lowest sample examined (S7) has a fauna already cooler than those correlated with much of GI-1e; it remains possible that the fauna encapsulates GI-1d since the number of species present is insufficient for more precise correlation.

Conclusion

The Barmston sequence reflects deposition in small discrete basins over the Skipsea Till beginning with rhythmite, laminated clay-silt deposition during the LGM whilst ice was still present, if largely buried beneath sediments. Subsequent melt-out created several small basins, kettleholes, along the line of the later Barmston Drain. Organic sediments in one of these, exposed by coastal erosion in 1980, preserved an insect fauna indicating an open landscape around a pool with some flow. MCR estimates suggest summer temperatures similar to, or slightly cooler than present day but with winters significantly cooler (Fig. 9). Radiocarbon dates on wood from the base and top of the peat within the sequence provide a range of 14135 ± 539 to 13126 ± 314 calibrated years BP, before erosion and soliflucted sands and gravels terminated organic deposition. Stratigraphically later sequences examined by Varley (1968) and the Humber Wetlands Unit (van de Noort, 1995) lie in a basin centred to the west of this Lateglacial succession. Later deposits are disturbed by structures of unknown function of Bronze Age date, the whole being sealed by more recent colluvium.

Acknowledgements

The initial fieldwork was carried out by Derek Allen at the suggestion of the late Doug Bridger and samples were processed under the guidance of the late Professor G.R. Coope in the then Department of Geology at the University of Birmingham, who also identified the insect remains. The late Professor F.W. Shotton identified the molluscs and J.R.A. Greig the plant macrofossils. Subsequent work by Dan Hartmann formed part of an MSc project in the Department of Geography at the University of Sheffield supervised by Professor Mark Bateman. Joan Buckland assisted with additional fieldwork in 2015 and 2016. The comments of Professor Malcolm Lillie on the re-excavation of Varley's trench by the Humber Wetlands Unit added significantly to the interpretation and the input of two anonymous referees is also appreciated.

References

Allen, J.D. (1980) *Aspects of Late-Glacial environments in Northern England* B.Ed thesis, University of Hull.

Anderson, R. & Rowson, B. (2020) *Annotated list of the non-marine Mollusca of Britain and Ireland*, 2020. Natural History Museum, London. http://www.nhm.ac.uk/our-science/data/uk-species/checklists/ NHMSYS0001700910/index.html. Accessed June 2016.

Angus, R.B. (1973) Pleistocene *Helophorus* (Coleoptera, Hydrophilidae) from Borislav and Starunia in the Western Ukraine, with a reinterpretation of M. Lomnicki's species, description of a new Siberian species, and comparison with British Weichselian faunas. *Philosophical*

Transactions of the Royal Society of London 265: 299-326. http://DOI: 10.1098/rstb.1973.0030

Ardron, P.A. (1999) *Peat cutting in upland Britain with special reference to the Peak District: its impact on landscape, archaeology and ecology.* PhD thesis, University of Sheffield.

Atkinson, T.C., Briffa, K.R., Coope, G.R., Joachim, J.M. & Perry, D.W. (1986) Climatic calibration of coleopteran data. In *Handbook of Holocene Palaeoecology and Palaeohydrology*, ed. B.E. Berglund: 851-858. J. Wiley & Sons, Chichester.

Atkinson, T.C., Briffa, K.R. & Coope, G.R. (1987) Seasonal temperatures in Britain during the last 22,000 years. *Nature* 325: 587-592. http://doi:10.1038/325587a0

Barker, H. & Mackey, J. (1963) British Museum natural radiocarbon measurements IV. *Radiocarbon* 5: 104-108.

Barnes, C. (2021) The distribution of *Bromius obscurus* (Linnaeus) (Chrysomelidae) in north Lincolnshire. *The Coleopterist* 30: 126-127.

Bateman, M.D., Buckland, P.C., Whyte, M.A., Ashurst, R.A., Boulter, C. & Panagiotakopulu, E. (2011) Re-evaluation of the Last Glacial Maximum typesite at Dimlington, UK. *Boreas* 40: 573-584. http://doi: 10.1111/j.1502-3885.2011.00204.x

Bateman, M.D. & Catt, J.A. (1996) An absolute chronology for the raised beach and associated deposits at Sewerby, East Yorkshire, England. *Journal of Quaternary Science* 11: 389-395. http://doi: 10.1002/(SICI)1099-1417(199609/10)11:5

Bateman, M.D., Evans, D.J.A., Buckland, P.C., Connell, E.R., Friend, R.J., Hartmann, D., Moxon, H., Fairburn, W.A., Panagiotakopulu, E. & Ashurst, R.A. (2015) Last glacial dynamics of the Vale of York and North Sea lobes of the British and Irish Ice Sheet. *Proceedings of the Geologists' Association* 126: 712-730. http://dx.doi.org/10.1016/j.pgeola.2015.09.005

Bayliss, A. & Dinnin, M. (1995) Radiocarbon dates, In *Wetland heritage of Holderness*, eds R. van de Noort & S. Ellis, 373-376. Humber Wetland Unit, Hull.

Beckett, S.A. (1981) Pollen diagrams from Holderness, North Humberside. *Journal of Biogeography* 8: 177-198. http://DOI: 10.2307/2844676

Böcher, J. (1988) The Coleoptera of Greenland. *Meddelelser om Grønland – Bioscience* 26.

Böhme, J. (2005) *Die Käfer Mitteleuropas. K. Katalog (Faunistiche Übersicht)* (2nd ed.). Spektrum Academic, Munich.

Boylan, P.J. (1966) New records of Holocene mollusca from East Yorkshire. *Naturalist* 899: 113-118.

Bridger, J.F.D. (1977) Barmston (Site 30). In *INQUA X Congress 1977. Guidebook for excursion C7. Yorkshire and Lincolnshire,* ed: J.A. Catt, J. A.: 32-36. Geoabstracts, Norwich.

Brundin, L. (1934) *Die Coleopteren des Tornträskgebietes. Ein beitrag zur Ökologie und Geschichte der Käferwelt in Schwedisch-Lappland*. Carl Bloms, Lund.

Buckland, P.I. (2007) *The development and implementation of software for palaeoenvironmental and palaeoclimatological research: the Bugs Coleopteran Ecology Package (BugsCEP)*. PhD thesis, Umeå University, Umeå, Sweden, http://www.diva-portal.org/smash/record.jsf?pid=diva 2%3A140207& dswid=article

Buckland, P.I. & Buckland, P.C. (2006) *Bugs Coleopteran Ecology Package (Versions: BugsCEP v7.56; Bugsdata v7.11; BugsMCR v2.0; BugStats v1.2) [*Downloaded: 4.6.16*] www.bugscep.com.*

Campbell, J.M. (1982) A revision of the North American Omaliinae (Coleoptera: Staphylinidae). The genus *Acidota* Stephens. *Canadian Entomologist* 114: 1003-1029, http://dx.doi.org/10.4039/Ent1141003-11

Campbell, J. M. (1983) A revision of the North American Omaliinae (Coleoptera: Staphylinidae). The genus *Olophrum* Erichson. *Canadian Entomologist* 115: 577-622.

Campbell, J. M. (1984) A revision of the North American Omaliinae (Coleoptera: Staphylinidae). The genera *Arpedium* Erichson and *Eucnecosum* Reitter. *Canadian Entomologist* 116; 487-527, http://dx.doi.org/10.4039/Ent116487-4

Catt, J.A. (2007) The Pleistocene glaciations of eastern Yorkshire: a review. *Proceedings of the Yorkshire Geological Society* 56: 177-207. http://doi.org/10.1144/pygs.56.3.177

Coope, G.R. & Osborne, P.J. (1968) Report on the Coleopterous Fauna of the Roman Well at Barnsley Park, Gloucestershire. *Transactions of the Bristol and Gloucestershire Archaeological Society* 86: 84-87.

Davies, P. (2008) *Snails. Archaeology and landscape change*. Oxbow Books, Oxford.

Dieckmann, L. (1972) Beiträge zur Insektenfauna der DDR: Coleoptera – Curculionidae: Ceutorhynchinae. *Beiträge zur Entomologie* 22: 1-128.

Dillon, E.S. & Dillon, L.S. (1972) *A Manual of Common Beetles of Eastern North America.* Dover, New York.

Elliott, J.M. (1996) *British freshwater Megaloptera and Neuroptera. A key with ecological notes*. Freshwater Biological Association, Ambleside.

Evans, D.J.A., Owen, L.A. & Roberts, D. (1995) Stratigraphy and sedimentology of Devensian (Dimlington Stadial) glacial deposits, east Yorkshire, England. *Journal of Quaternary Science* 10: 241-265, DOI: 10.1002/jqs.3390100305

Evans, D. J. A., Roberts, D. H., Bateman, M. D., Clark, C. D., Medialdea, A., Callard, L., Grimoldi, E., Chiverrell, R. C., Ely, J., Dove, D., Ó Cofaigh, C., Saher, M., Bradwell, T., Moreton, S. G., Fabel, D. & Bradley, S. L. (2021) Retreat dynamics of the eastern sector of the British–Irish Ice Sheet during the last glaciation. *Journal of Quaternary Science* 36**:** 723-751. https://doi.org/10.1002/jqs.3275

Evans, D.J.A. & Thomson, S.A. (2010) Glacial sediments and landforms of Holderness, eastern England: a glacial depositional model for the North Sea lobe of the British-Irish ice sheet. *Earth Science Reviews* 101: 147-189, http://dx.doi.org/10.1016/j.earscirev.2010.04.003

Foster, G.N. & Friday, L.E. (2011) *Keys to the adults of the water beetles of Britain and Ireland (Part 1). Handbooks for the Identification of British Insects,* 4, 5. Field Studies Council for the Royal Entomological Society, Preston Montfort.

Gilbertson, D.D. (1984) *Late Quaternary Environments and Man in Holderness*. British Archaeological Reports 134, Oxford.

Hartmann, D. (2011) *Glacial history of the Holderness coastline; constraining the age of the Skipsea Till*. MSc thesis, Sheffield University.

Hyman, P.S. (1994) *Review of the scarce and threatened Coleoptera of Great Britain. Part 2*. Joint Nature Conservancy Council, Peterborough.

Kendall, P. (1981) *Bromius obscurus* (L.) in Britain (Col., Chrysomelidae). *Entomologist's monthly Magazine* 117: 233-234.

Koch, K. (1989) *Ökologie 2. Die Käfer Mitteleuropas*. Goecke & Evers, Krefeld.

Koch, K. (1992) *Ökologie 3. Die Käfer Mitteleuropas*. Goecke & Evers, Krefeld.

Lillie, M. (1995) Soil erosion in Holderness: geomorphological and archaeological perspectives, in *Wetland heritage of Holderness. An archaeological survey*, eds R. van de Noort & S. Ellis, 129-148. Humber Wetlands Project, Hull.

Lindroth, C.H. (1957) *The faunal connections between Europe and North America*. John Wiley & Sons, New York.

Lindroth, C.H. (1963) The fauna history of Newfoundland illustrated by carabid beetles. *Opuscula Entomologica Suppl.* 23: 1-112.

Lindroth, C.H. (1985) *The Carabidae (Coleoptera) of Fennoscandia and Denmark*. Fauna Entomologica Scandinavica, 15,1. E.J.Brill, Leiden.

Lowe, J.J., Ammann, B., Birks, H.H., Björck, S., Coope, G.R., Cwynar, L., De Beaulieu, J.L., Mott, R.J., Peteet, D.M. & Walker, M.J.C. (1994) Climatic changes in areas adjacent to the North Atlantic during the last glacial-interglacial transition (14-9 ka BP): a contribution to IGCP-253. *Journal of Quaternary Science* 9: 185-198.

Lowe, J.J., Coope, G.R., Sheldrick, C., Harkness, D.D. & Walker, M.J.C. (1995) Direct comparison of UK temperatures and Greenland snow accumulation rates, 15000-12000 yr ago. *Journal of Quaternary Science* 10: 175-180, DOI: 10.1002/jqs.3390100207

Luff, M.L. (1998) *Provisional atlas of the ground beetles (Coleoptera, Carabidae) of Britain*. Centre for Ecology & Hydrology, Monks Wood.

Morris, M.G. (2002) *True Weevils (Part 1) Coleoptera: Curculionidae (Subfamilies Raymondionyminae to Smicronychinae). Handbooks for the identification of British insects,* 3, 17b. Field Studies Council for Royal Entomological Society, Preston Mountford.

Nilsson, A.N. & Holmén, M. (1995) *The aquatic Adephaga (Coleoptera) of Fennoscandia and Denmark. II. Dytiscidae*. Fauna Entomologica Scandinavica 32, E.J.Brill, Leiden.

Rasmussen, S.O., Bigler, M., Blockley, S.P., Blunier, T., Buchardt, S.L., Clausen, H.B., Cvijanovic, I., Dahl-Jensen, D., Johnsen, S.J., Fischer, H., Gkinis, V., Guillevic, M., Hoek, W.Z., Lowe, J.J., Pedro, J.B., Popp, T., Seierstad, I.K., Steffensen, J.P., Svensson, A.M., Vallelonga, P., Vinther, B.M., Walker, M. J.C., Wheatley, J.J. & Winstrup, M. (2014) A stratigraphic framework for abrupt climatic changes during the Last Glacial period based on three synchronized Greenland ice-core records: refining and extending the INTIMATE event stratigraphy. *Quaternary Science Reviews* 106: 14-28, http://dx.doi.org/10.1016/j.quascirev.2014.09.007

Rheinheimer, J. & Hassler, M. (2010) *Die Rüsselkäfer Baden-Württembergs*. Landesanstalt für Umwelt, Messungen und Naturschultz Baden-Württemberg, Karlsruhe.

Robinson, J.E. (1972) Quaternary Ostracoda from East Yorkshire and North Lincolnshire. *Quaternary Newsletter* 7: 1-2.

Rose, J. (1985) The Dimlington Stadial/Dimlington Chronozone: a proposal for naming the main glacial episode of the Late Devensian in Britain. *Boreas* 14: 225-230, http://doi: 10.1111/j.1502-3885. 1985.tb00724.x

Rushworth, G. (1998) Rhythmites from Barmston, East Yorkshire. *Quaternary Newsletter* 86: 17-21.

Sheppard, J.A. (1958) *The draining of the Hull Valley*. East Riding Local History Society, Hull.

Smith, R.A. (1911) Lake-dwellings in Holderness, Yorkshire. *Archaeologia* 62: 593-610.

Stace, C.A. (2010) *New Flora of the British Isles.* (3rd ed.). Cambridge University Press, Cambridge.

Stenhouse, D.A. (2021) *The status and distribution of the leaf beetle* Bromius obscurus *(Linnaeus, 1758) in Cheshire in 2019 and 2020*. Tanyptera Trust & National Museums, Liverpool.

Van de Noort, R. (1995) West Furze: the reconstruction of a monumental wetland landscape, in *Wetland heritage of Holderness*. *An archaeological survey* eds R. van de Noort & S. Ellis, 323-334. Humber Wetlands Unit, Hull.

Varley, W.J. (1968) Barmston and the Holderness Crannogs. *East Riding Archaeologist* 1: 11-26.

Walker, M.J., Coope, G.R. & Lowe, J.J. (1993) The Devensian (Weichselian) Lateglacial Palaeoenvironmental record from Gransmoor, East Yorkshire, England. *Quaternary Science Reviews* 12: 659-680, doi:10.1016/0277-3791(93)90006-8

Aquatic plants along the Yorkshire River Derwent

R. Goulder
5 Bishops Croft, Beverley HU17 8JY
Email: r.goulder@kategoulder.karoo.co.uk

Introduction

The Yorkshire River Derwent is a perplexing resource for a field botanist who has an interest in water plants. On the one hand, it is clearly likely to be botanically interesting because: (1) much of the river has been notified as SSSI, in part because of its aquatic plants (Natural England, undated a); (2) historic and more-recent county floras have many aquatic plant records from the river, its associated watercourses, and its riparian surroundings (Baines, 1840; Baker, 1906; Robinson, 1902; Crackles, 1990); (3) the Derwent Ings, along the lower course of the river, are renowned for their water and wetland vegetation (Jefferson, 2006). On the other hand, access to the river and its plants is often difficult, and in places potentially hazardous, because: (1) the river is privately owned and riverside public footpaths are limited in extent; (2) where there is a footpath, it may be set back from the water's edge, with impenetrable vegetation between path and river, it may be fenced from the river, or banks may fall impassibly steeply to the water's edge. The aim of this article is to give information about water plants that may be seen along accessible parts of the river, using observations made in the summers of 2020 and 2021.

The Derwent has a length of c.115km (Environment Agency, undated). Its source on the North York Moors is only c.12km from the North Sea coast, but it runs southward soon passing through the base-rich woodlands of Forge Valley - a National Nature Reserve and SSSI (Natural England, undated b). Here the river is calcareous and flows rapidly, largely within its natural banks; it has runs and riffles, and a bed of stones and/or silt. On the lowlands, downstream of East and West Ayton, the river runs more slowly and continues southward into the Vale of Pickering where it is joined by the River Hertford; it then flows westward and south-westward to Rye Mouth where it is joined by the River Rye. Much of this part of the river has been dredged and straightened (Pedley, 2012). Downstream of Rye Mouth the general direction of flow is southward, through the Vale of York, to the Ouse at Barmby where there is a tidal barrage. The chief settlements on the river are Malton and Stamford Bridge. The Derwent from Rye Mouth to Barmby (c.70km of river) is SSSI (Natural England, undated a) being regarded as a lowland river with features of its flora and fauna having national significance. The channel is sinuous, with earthen banks but is nevertheless much modified.

There have been changes to benefit flood prevention, land drainage, waterpower, navigation, and water supply (Dennis, Girvan & Williamson, 2010). Sometimes there are levees, often set back from the river. The Derwent was made navigable upstream to Malton in the 18th century and associated weirs and locks were built (Jones 2000). Today, leisure craft use the lower reaches. Elvington Lock, at Sutton Upon Derwent, was out of use in summer 2020, although there were various sorts of boats moored upstream of Sutton Bridge and small motor cruisers at Stamford Bridge. A useful account of water quality is given by Upsher (2014); he describes the river as well oxygenated and relatively unpolluted throughout its length. Inorganic nutrients, especially nitrate and phosphate, are abundant, a feature that is related to arable and livestock farming in the catchment, and to inputs of effluent from sewage works. The river also tends to

be silty, with high suspended solids at times of high flow (Goulder, 1986).

Aquatic plants along the river in 2020-2021

Observations of aquatic plants were made in June-September 2020 and/or 2021, along 17 lengths of river that ranged in extent from 145m to 2100m, mean length 951m (Table 1). Total length surveyed was c.16.2km. Lengths 1-3 (c.3.3 km) were along the upper course, at East and West Ayton and upstream; Lengths 4-17 (c.12.9km) were along the middle and lower course between Rye Mouth and Barmby Barrage.

Table 1. Lengths surveyed along the River Derwent in 2020-2021

Length	Extent of river surveyed (m)	Location
1	1030	Upstream from Wrench Green Bridge (SE 96798927)
2	2100	In Forge Valley, downstream from the footbridge (SE 98418711)
3	145	Downstream from Ayton Bridge (SE 98808477)
4	810	Upstream from the suspension bridge at Low Hutton (SE 7650 6770)
5	715	Downstream from Jeffry Bog (SE 76006680)
6	360	Downstream from Kirkham Bridge (SE 73366581)
7	812	Upstream from the Stamford Bridge mill race (SE 71295559)
8	1660	Downstream from Stamford Bridge (SE 71135558)
9	1460	Upstream from Kexby New Bridge (SE 70505113)
10	830	Downstream from Kexby Old Bridge (SE 70545108)
11	1300	Upstream from Sutton Bridge (SE 70494766)
12	275	Upstream from Elvington Lock top gate (SE 70414741) to Sutton Bridge
13	1560	Downstream from Wheldrake Ings Bridge (SE 69444440)
14	1260	Upstream from Derwent Bridge at Bubwith (SE 70733643)
15	580	Downstream from demolished railway viaduct at Bubwith (SE 70793548)
16	510	Downstream from Tithe Farm (SE 70753069) to Loftsome Bridge Hotel
17	763	Downstream from Derwent House (SE 68722892) to the Barmby Barrage.

Lengths 1-3 are on the upper river; Lengths 4-17 are on the middle and lower river between Rye Mouth and Barmby. Total distance surveyed - approx.16.2km.

Recording was mostly from riverside footpaths and where access to the water's edge was restricted some identifications were made using binoculars. Submerged plants were sometimes retrieved using a grapnel, with permission from Natural England. Species recorded were those that feature on Palmer & Newbold's (1983) checklist of aquatic plants that are found in England and Wales (their Table 2). Aquatic plants that were usually submerged or floating-leaved are listed separately from those that were emergent. Nomenclature follows Stace (2019); scientific names are given at first appearance in the text, but only if they are not in the tables. The relative abundance of aquatic plants along each length was estimated, using a truncated, 3-point, DAFOR scale: i.e. (1) plants that formed substantial beds of vegetation were recorded as dominant/abundant; (2) plants that were widespread and easy to find as frequent; (3) plants that were uncommon or hard to find as occasional/rare. This lack of precision is appropriate given that access and visibility were often restricted.

Thirty-six aquatic plants were found (Table 2, p102); 12 submerged/floating-leaved and 24 emergent. The table shows the lengths in which plants were found and their relative abundance. Extensive beds of submerged/floating leaved plants were not a widespread feature of the river. Nevertheless, Unbranched Bur-reed, with its trailing underwater and floating leaves, was observed in ten of the 17 lengths, being dominant/abundant in the upper river in Forge Valley (Length 2) and frequent in four lengths further downstream. Yellow Water-lily, with its leathery floating and/or underwater translucent leaves was also characteristic of the river; it was found in nine lengths, being frequent in four of them. Free-floating Common Duckweed, in sheltered water, was observed in 11 lengths but was never more than occasional/rare. Three Pondweeds (family Potamogetonaceae) were found. These were Fennel Pondweed in six lengths, Shining Pondweed in five lengths, and Perfoliate Pondweed in four lengths. Fennel and Perfoliate Pondweed were both frequent downstream of Stamford Bridge (Length 8), and the former was also frequent near Loftsome Bridge (Length 16); otherwise, Pondweeds were recorded as occasional/rare. Water-crowfoot was found in only three lengths. It was in places conspicuous in the fast-flowing upper river, being dominant/abundant upstream of Wrench Green Bridge (Length 1) and frequent in Forge Valley (Length 2). It was also frequent in fast-flowing water adjacent to the weir at Kirkham (Length 6). An additional noteworthy find was Frogbit. Although Its rosettes are free-floating, a few plants, in sheltered water, were seen near Bubwith (Length 14).

Marginal stands of emergent aquatic plants, in places several metres wide, were a feature of the river, except when excluded by tree shading. The two principal 'reed-like' plants were Reed Canary-grass and Reed Sweet-grass, which tended to dominate in mutually exclusive stands. Reed Canary-grass was found along all 17 lengths, being dominant/abundant or frequent in 13 of them. Reed Sweet-grass was found in 13 lengths and was dominant/abundant or frequent in 12 of them. It was not found in the upper river (Lengths 1-3). Other notable 'reed-like' plants were Branched Bur-reed and Flowering-rush. These tended to occupy marginally deeper water and were sometimes also represented by trailing submerged or surface leaves. Branched Bur-reed was found in 12 lengths and was dominant/abundant or frequent in five of them; Flowering-rush was observed in nine lengths, although it was never dominant/abundant and was frequent in only one length. Arrowhead was another plant that tended to occupy less shallow water, and had floating and submerged leaves, as well as emergent ones. It was found in eight lengths, being frequent in three, but was never dominant/abundant. Several other emergent plants were important in the river margins; for example, Creeping Bent, Marsh Marigold, Fool's-water-cress, Yellow Iris, Soft Rush, Water Mint, Water Forget-me-not, Amphibious Bistort, Bittersweet, Blue Water-speedwell and Brooklime were all found in at least five lengths or were dominant/abundant in at least one length. Some emergent plants, for example Marsh Marigold and Soft Rush, were important only along the upper river, especially in Forge Valley. Others, for example, Reed Sweet-grass, Arrowhead and Amphibious Bistort, were only found further downstream. Some, for example, Water Mint, Water Forget-me-not, and Reed Canary-grass, tended to be ubiquitous in their distribution.

Table 2. Aquatic plants along the Yorkshire River Derwent, 2020-2021

	No. of lengths in which recorded (out of 17)	**Lengths in which recorded** (for locations see Table 1)
Submerged and floating-leaved plants		
Callitriche sp. Water-starwort	2	2†,3
Elodea canadensis Canadian Waterweed	1	2
Elodea nuttallii Nuttall's Waterweed	3	12†,16,17
Hydrocharis morsus-ranae Frogbit	1	14
Lemna minor Common Duckweed	11	4,5,6,7,8,9,10,11,14,15,16
Lemna trisulca Ivy-leaved Duckweed	2	11,14
Nuphar lutea Yellow Water-lily	9	4†,5†,6†,7†,8,9,10,11,14
Potamogeton lucens Shining Pondweed	5	4,8,10.11,14
Potamogeton perfoliatus Perfoliate Pondweed	4	8†,14,16,17
Ranunculus sp. Water-crowfoot	3	1*,2†,6†
Sparganium emersum Unbranched Bur-reed	10	2*,4,5†,6†,7,8†,9†,10,11,14
Stuckenia pectinata Fennel Pondweed	6	8†,9,14,15,16†,17
Emergent plants		
Agrostis stolonifera Creeping Bent	9	2,5,7,8,9,11,14,16,17
Alisma plantago-aquatica Water-plantain	2	9,15
Berula erecta Lesser Water-parsnip	3	2,6,17
Butomus umbellatus Flowering-rush	9	4,5,6,8†,9,10,12,14,17
Caltha palustris Marsh Marigold	3	2*,3*,5
Galium palustre Common Marsh-bedstraw	2	1,6
Glyceria fluitans agg. Floating Sweet-grass	4	1,2,8,9
Glyceria maxima Reed Sweet-grass	13	4*,5*,6*,7*,8†,9*,10*,11*,12*, 14, 15*,16*,17*
Helosciadium nodiflorum Fool's-water-cress	6	2,6,8,9†,16,17
Iris pseudacorus Yellow Iris	5	2,3†,5†,10,14
Juncus effusus Soft Rush	4	1,2†,3*,6
Mentha aquatica Water Mint	10	1,2†,3,4,5,7,8,14,16,17
Myosotis scorpioides Water Forget-me-not	13	1,2†,3†,4†,5†,6†,7,8,9,11,14†,16,17†
Nasturtium officinale Water-cress	2	1,6
Persicaria amphibia Amphibious Bistort	9	5,6,7,8†,9,11,14†,15,16
Phalaris arundinacea Reed Canary-grass	17	1,2*,3*,4*,5†,6,7†,8*,9†,10†,11,12, 13*,14*, 15*,16†,17*
Phragmites australis Common Reed	1	13
Ranunculus sceleratus Celery-leaved Buttercup	4	8,14,16,17
Sagittaria sagittifolia Arrowhead	8	4,8†,9†,10,11,12,14†,15
Schoenoplectus lacustris Common Club-rush	1	8
Solanum dulcamara Bittersweet	7	2,4,5,7,8,10,11
Sparganium erectum Branched Bur-reed	12	2*,3*,4*,5†,6,7,8,9†,10,11,12,14
Veronica anagallis-aquatica Blue Water-speedwell	5	4,6,14,16,17
Veronica beccabunga Brooklime	9	1,2,3†,6,8,9†,14,16,17

*Indicates dominant or abundant, †indicates frequent, all other records are occasional or rare.

Table 3. Emergent aquatic plants and wetland and riparian plants in the east-side river margin upstream of Derwent Bridge at Bubwith (Length 14), August 2020.

Emergent aquatic plants	**Wetland and riparian plants**
Agrostis stolonifera Creeping Bent *Butomus umbellatus* Flowering-rush *Glyceria maxima* Reed Sweet-grass *Iris pseudacorus* Yellow Iris *Mentha aquatica* Water Mint *Myosotis scorpioides* Water Forget-me-not *Persicaria amphibia* Amphibious Bistort *Phalaris arundinacea* Reed Canary-grass* *Ranunculus sceleratus* Celery-leaved Buttercup *Sagittaria sagittifolia* Arrowhead *Sparganium erectum* Branched Bur-reed *Veronica anagallis-aquatica* Blue Water-speedwell *Veronica beccabunga* Brooklime	*Bidens tripartita* Trifid Bur-marigold *Epilobium hirsutum* Great Willowherb *Filipendula ulmaria* Meadowsweet *Impatiens glandulifera* Indian Balsam *Lythrum salicaria* Purple-loosestrife *Pulicaria dysenterica* Common Fleabane *Scrophularia auriculata* Water Figwort *Stachys palustris* Marsh Woundwort

*Dominant. The margins are puddled by livestock.

Table 4. Emergent aquatic plants and wetland and riparian plants along approximately 150m of fen-like, west-side margin immediately downstream of the bridge at Kirkham (Length 6), July 2021 and August 2022.

Emergent aquatic plants	**Wetland and riparian plants**
Berula erecta Lesser Water-parsnip *Galium palustre* Common Marsh-bedstraw *Glyceria maxima* Reed Sweet-grass* *Helosciadium nodiflorum* Fool's-water-cress *Juncus effusus* Soft Rush *Mentha aquatica* Water Mint *Myosotis scorpioides* Water Forget-me-not *Nasturtium officinale* Water-cress *Persicaria amphibia* Amphibious Bistort *Phalaris arundinacea* Reed Canary-grass *Solanum dulcamara* Bittersweet *Veronica beccabunga* Brooklime *Veronica anagallis-aquatica* Blue Water-speedwell	*Angelica sylvestris* Wild Angelica *Epilobium hirsutum* Great Willowherb *Filipendula ulmaria* Meadowsweet *Impatiens glandulifera* Indian Balsam *Juncus inflexus* Hard Rush *Scrophularia auriculata* Water Figwort *Stachys palustris* Marsh Woundwort *Valeriana officinalis* Common Valerian

*Dominant

Emergent/marginal aquatic plants thrived where grazing and browsing livestock led to unshaded riverbanks, largely free of trees and shrubs, and where trampling created a more disturbed and diverse habitat. For example, in August 2020, the river for 1260m upstream of the bridge at Bubwith (Length 14), which traversed mostly open pasture, grazed by sheep and cattle, had marginal beds of Reed Canary-grass, 1-3m wide, which were liable to trampling. Here was found a wide range of both emergent aquatic plants and non-checklist wetland and riparian plants (Table 3). Another site with a diversity of marginal plants was an area of fen-like vegetation, sparsely and intermittently shaded by Alder *Alnus glutinosa* and dominated by Reed Sweet-grass, along the west bank immediately downstream of Kirkham Bridge (Length 6) (Table 4).

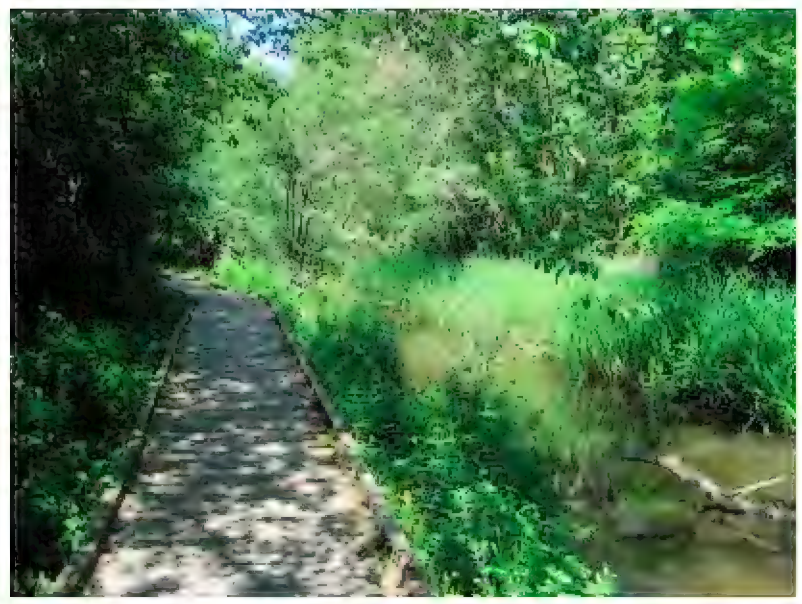


Figure 1 (Top left). The upper Derwent in the Forge Valley woodlands (Length 2), June 2021; a river of riffles and runs, marginal aquatic plants are largely Reed Canary-grass and Branched Bur-reed, the somewhat dilapidated boardwalk is to allow wheelchair access.

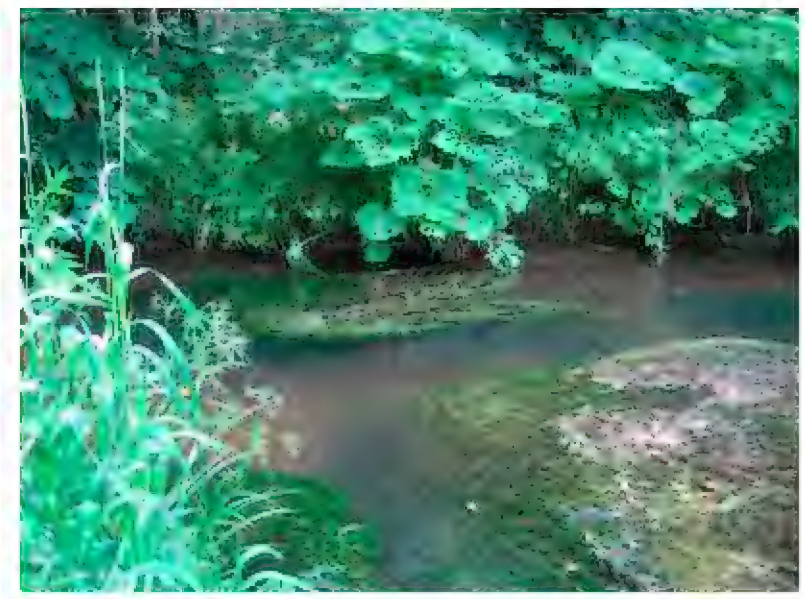


Figure 2. Submerged beds of Water-crowfoot in the upper Derwent (Length 2), June 2022; the marginal plants in the left foreground include Reed Canary-grass and Wood Club-rush *Scirpus sylvaticus*.

Figure 3. The lower Derwent upstream from Sutton Bridge (Length 11), August 2020; a deep turbid river; the marginal emergent vegetation along the far bank is largely Reed Sweet-grass.

Figure 4. The floating leaves of Frogbit, with Common Duckweed and Reed Canary-grass, in the lower Derwent at Bubwith (Length 14), August 2020.

All photos by R. Goulder

Discussion

The 2020-2021 plant survey was limited because it was confined to observations made from public footpaths, that were often hampered by dense terrestrial vegetation, steep banks, and turbid water, and only 16.2km of river were surveyed. Nevertheless, some tentative ecological conclusions can be made. Submerged plants may have been suppressed by deep water, turbidity and limited underwater light availability. Emergent plants may have been favoured by open areas, created by the trampling and grazing of livestock, but suppressed by tree shading and banks that were too steep. Potentially there is tension between the observation that trampling encourages plant diversity and the River Restoration Plan for the Derwent Catchment (Dennis,

Girvan & Williamson, 2010) that seeks to reduce inputs of suspended solids by fencing the river margin to prevent poaching by cattle. The increased silt load that is directly due to poaching alongside the main river may be relatively small when compared with the total load that is generated by catchment-wide agriculture and land use.

The results from 2020-2021 (Table 2, p102) can be compared with professional plant surveys, made in 2002 (Scott-Wilson, 2002) and 2009 (ECUS, 2009), that were undertaken for the Environment Agency, and/or English Nature/Natural England and Yorkshire Water Services. They used boats, and/or snorkelling, and wading, and benefitted from statutory right of access. The first of these surveyed 13 pairs of contiguous 0.5km lengths (13km in all) from Rye Mouth downstream to Wheldrake, and the second surveyed sixteen 0.5km lengths from Rye Mouth downstream to Bielby. My 2020-2021 results largely agreed with these earlier surveys. They too had found that submerged and floating-leaved plants, that were widely distributed and/or abundant along the river, included Unbranched Bur-reed, Yellow Water-lily, and Shining, Perfoliate and Fennel Pondweeds. Likewise, also widely distributed in 2002/2009, were the sometimes emergent, but often submerged or floating, Flowering-rush and Arrowhead, and the emergent marginal plants Reed Sweet-grass, Reed Canary-grass, and Branched Bur-reed. Indeed, most of the aquatic plants found in 2020-2021 (Table 2) had also been recorded by the 2002 and 2009 surveys. Exceptions were Canadian Waterweed, Nuttall's Waterweed, Frogbit, Ivy-leaved Duckweed, Marsh Marigold, Common Marsh-bedstraw, and Soft Rush. Some of these may well have been in the river in 2002 and/or 2009 but in lengths that were not surveyed, or they may have been missed. Some, however, may be newcomers.

Frogbit is, very likely, in effect new to the Derwent, although it was reported, over a century ago, upstream of Malton (Baker, 1906). It is vulnerable in England (Stroh *et al.,* 2014) and is possibly represented by recent introductions in vice counties 62 (NE Yorkshire) and 61 (SE Yorkshire) (Barlow, 2020; Middleton & Cook, 2015). It is free-floating and usually occupies still water. In 2020 a few plants were found, in places sheltered from the current, in the river at Bubwith (Length 14) downstream of where it is joined by the Pocklington Canal. It seems to have originated from the canal, where it was abundant in 2017 (Goulder, 2019) and was seen to persist in 2019, 2020 and 2022 (personal observation and Jukes, 2019). It was not found in several earlier surveys of the canal, made between 1986 and 2015 (Goulder, 2017), hence it is probably a recent introduction to the canal and a recent coloniser of the river. It may not persist in the river, indeed Scott-Wilson (2002) suggested that diverse plants from the canal may temporarily colonise the lower river but eventually succumb to unfavourable conditions. A similar, parallel, observation was the author's finding of Frogbit in the River Don at Rotherham in September 2013. This was downstream of a length of canal that held Frogbit (Goulder, 2013).

Pondweeds (Potamogetonaceae) tend to do well in moderately flowing, silty, lowland rivers (Preston, 1995) but were disappointing in the Derwent. Only Shining, Perfoliate, and Fennel Pondweeds were recorded in 2020-2021 and although these each occurred in several lengths none was ever dominant or abundant (Table 2, p103). They were also found in several lengths of the 2002 and 2009 surveys (Scott-Wilson, 2002; ECUS, 2009). In addition, the 2002 survey found Broad-leaved Pondweed *Potamogeton natans* in four 0.5km lengths and Curled Pondweed *Potamogeton crispus* in one length. The relative dearth of Pondweeds in the Derwent contrasts

with the richer Pondweed flora of its tributary waterway, the Pocklington Canal, wherein surveys since 2002 have recorded Broad-leaved, Curled, Fennel, Flat-stalked *Potamogeton friesii*, Horned *Zannichellia palustris*, Opposite-leaved *Groenlandia densa*, Shining, and Small *Potamogeton berchtoldii* Pondweeds (Goulder, 2003, 2014, 2017; Scott-Wilson, 2008; Jukes, 2019). These plants probably benefit from clear water and slow flow in the canal which contrast with substantial turbidity and faster flow in the river.

Water Crowfoot is a characteristic river plant (Preston & Croft, 1997) but is often difficult to identify to species level. Indeed, Lansdown (2008) believed that there is so much polyploidy and hybridisation that attempts to name plants will likely be unreliable. The Water Crowfoot, found in the Derwent in three lengths in 2020-2021, had only submerged capillary leaves, with no floating leaves. Critical investigation is needed and there may have been more than one taxon present. The 2002 survey (Scott-Wilson, 2002) recorded Water Crowfoot in seven of twenty-six 500m lengths and identified it as River Water-crowfoot *Ranunculus fluitans*. The 2009 survey (ECUS, 2009) found Water Crowfoot in only two of sixteen 500m lengths and committed to an identification of River Water-crowfoot in one of these. It may have decreased since 2002.

Walking along the Derwent to seek water plants proved to be rewarding, even though access was restricted to public footpaths. Beds of submerged and floating-leaved plants were seen, and there were lengths where a variety of emergent aquatic and wetland plants were found (e.g., see Tables 3 & 4, p103). These are positive features, to be enjoyed and appreciated. They are, for good or ill, to a degree, dependent upon historic and present-day modification and management of the river and its catchment. Variables that are likely to be relevant include: construction of weirs for waterpower and navigation, with associated change in depth and flow; the abandonment of through navigation; the loss of tides upstream of the Barmby Barrage; management of trees and shading; change in human populations and methods of sewage disposal; change in fertiliser use, and the balance of arable and pasture. Additionally, there are invasive, non-native plants; Indian Balsam is widespread along the river. Although there is a perception that the ecological status of the river has deteriorated, it is good to know that concerned statutory and voluntary bodies have sought to recognise problems and are seeking to address them (e.g., Dennis, Girvan & Williamson, 2010; Pedley, 2012; Yorkshire Derwent Catchment Partnership, 2021, 2022)

Acknowledgements

I am grateful for support, encouragement and access to literature provided by Simon Christian and Jennifer Rowntree of Natural England, York

References

Baines, H. (1840) *The Flora of Yorkshire*. Longman, Orme, Brown, Green and Longman, London.

Baker, J.G. (1906) *North Yorkshire: Studies of its Botany, Geology, Climate, and Physical Geography.* A. Brown & Sons, London, Hull, and York.

Barlow, D. (2020) *Rare Plant Register for VC62*. BSBI, Bristol. https://bsbi.org//wp-content/uploads/dlm_uploads/Rare-plant-register-2020-31st-January-Final-Version.pdf.

Crackles, F.E. (1990) *Flora of the East Riding of Yorkshire.* Hull University Press and Humberside County Council, Hull.

Dennis, I., Girvan, J. & Williamson, P. (2010) *Restoring the Yorkshire Derwent: River Restoration Plan*. A report by Royal Haskoning Environment UK, London for Natural England, and

the Environment Agency. https://www.therrc.co.uk/DesignatedRivers/Yorks_Derwent_Restoration_Plan.pdf.

ECUS (2009) *River Derwent SSSI Macrophyte and RHS Surveys and Condition Assessment.* A report for Natural England, York by ECUS Environmental Consultancy, Sheffield.

Environment Agency (undated) *The Derwent Catchment (River Factfiles).* Environment Agency, North East Region, Leeds. http://www.environmentdata.org/archiv/ealit:1294/OB/19001137.pdf.

Goulder, R. (1986) Seasonal variation in the abundance and heterotrophic activity of suspended bacteria in two lowland rivers. *Freshwater Biology* 16: 21-37.

Goulder, R. (2003) Aquatic plants in the Pocklington and Driffield canals with regard to the potential extension of navigation. *The Naturalist* 128: 129-146.

Goulder, R. (2013) Free-floating plants in Sheffield and Rotherham canals. *Sorby Newsletter* No. 554 (November): 14-15.

Goulder, R. (2014) Aquatic plants in the Pocklington Canal; a decade of change. *The Naturalist* 139: 129-140.

Goulder, R. (2017) Freshwater plants and SSSI canals in the East Midlands and North of England 3: Leven Canal and Pocklington Canal. *The Naturalist* 142: 104-116.

Goulder, R. (2019) *Canals, Plants and People: a Yorkshire Perspective*. PLACE, York.

Jefferson, R.G. (2006) The nature conservation importance of the plant communities of the Lower Derwent Valley: a national perspective. In *Land Use, Ecology and Conservation in the Lower Derwent Valley*, ed. Milsom, T., pp. 45-56, PLACE, York.

Jones, P. (2000) *Navigation on the Yorkshire Derwent*. Oakwood Press, Usk, Monmouthshire.

Jukes, A. (2019) *Pocklington Canal: Macrophyte Survey*. Report on an in-house survey for Natural England.

Lansdown, R.V. (2008) *A Field Guide to the Riverine Plants of Britain and Northern Ireland: Including Selected Vascular Plants, Bryophytes, Lichens and Algae*. Ardeola Environmental Services, Stroud.

Middleton, R. & Cook, P.J. (2015) *South-east Yorkshire (vc61) Rare Plant Register*, 3rd edition. BSBI, Bristol. https://bsbi.org//wp-content/uploads/dlm_uploads/SE_Yorkshire_RPR_2015.pdf.

Natural England (undated a) River Derwent, SSSI designation. https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1003398.pdf.

Natural England (undated b) Raincliffe and Forge Valley Woods, SSSI designation. https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1003398.pdf.

Palmer, M. & Newbold, C. (1983) *Focus on Nature Conservation No 1: Wetland and Riparian Plants in Great Britain*. Nature Conservancy Council, Shrewsbury.

Pedley, G. (2012) *Advisory Visit for the East Yorkshire Chalk Rivers Trust, River Derwent (Yorkshire).* Wild Trout Trust, Waterlooville, Hampshire.

Preston, C.D. (1995) *Pondweeds of Great Britain and Ireland*. BSBI, London.

Preston, C.D. & Croft, J.M. (1997) *Aquatic Plants in Britain and Ireland*. Harley Books, Colchester.

Robinson, J.F. (1902) *The Flora of the East Riding of Yorkshire*. A. Brown & Sons, London, Hull, and York.

Scott-Wilson (2002) *River Derwent Macrophyte Survey, Final Report*. A report for the Environment Agency, English Nature, and Yorkshire Water Services by Scott-Wilson Resource Consultants, Leeds.

Scott-Wilson (2008) *A Botanical Survey of the Pocklington Canal (Contract No. Y&H/C6-2007).* A report for Natural England, York by Scott Wilson Ltd, Peterborough.

Stace, C.A. (2019) *New Flora of the British Isles* 4th edition. C & M Floristics, Middlewood Green, Suffolk.

Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay,

M.F., Martin, J.P., Pankhurst, T., Preston, C.D. & Taylor, I. (2014) *A Vascular Plant Red List for England*. BSBI, Bristol.

Upsher, D.J.A. (2014) *Fisheries Management Plan for the Yorkshire River Derwent*. MSc thesis, University of Hull. https://hydra.hull.ac.uk/resources/hull:11858.

Yorkshire Derwent Catchment Partnership (2021) *Catchment Management Plan: Yorkshire Derwent Catchment*. Yorkshire Wildlife Trust, York. https://catchmentbasedapproach.org/wp-content/uploads/2021/04/YDCP-Catchment-Management-Plan-updated-2021.pdf.

Yorkshire Derwent Catchment Partnership (2022) *Invasive Non-native Species, Report and Control Strategy for Riparian Plants: Yorkshire Derwent Catchment*. Updated by Conway, S. with original methodology by Cross, M. Yorkshire Wildlife Trust, York. https://catchmentbasedapproach.org/wp-content/uploads/2022/04/220407-INNS-Control-Strategy-2021-22-FINAL-SC.pdf.

John Ray, Yorkshire and the Johnson brothers

Frank Horsman
email: frankhorsman306@gmail.com

John Ray (1627-1705) was, by common consent, the greatest British naturalist of the 17th century. He studied a wide range of taxa and played an important role in early attempts to classify the natural world on scientific principles, a process later taken further by Linnaeus and Darwin. In recognition of his achievements, George Johnston, in 1844, founded The Ray Society which is still very active today, publishing books on natural history, with reference mainly to the flora and fauna of the British Isles (The Ray Society, 2023). The purpose of this article is to outline the links Ray had with Yorkshire, particularly through two brothers whose natural history achievements have been largely overlooked.

Ralph and John Johnson were both born in Newsham, eight miles north-west of Richmond in North Yorkshire, their father, William, being a husbandman there (Horsman, 2005). Ralph (1629-1695) was educated at Sedbergh and Cambridge University, although there is no record of him having taken a degree but he did become the Rev. Ralph Johnson. He became a master at Darlington Grammar School before opening his own school at the vicarage in Brignall, where he was the parson for the rest of his life. Ralph was an excellent teacher with a good number of the pupils making it to Cambridge. In 1665 he published a book on education (Johnson, 1665) which ran to three further editions. John (1642-1713) was an excellent draughtsman (Horsman, 2005) but little is known of his early life and there are no details of his education.

That both Ralph and John were extremely gifted in natural history is borne out by their association with John Ray. Ralph's interests extended to birds, fish and plants (Horsman, 1995). On what was his last simpling (a term originating from the 17th Century for the study and gathering of plants) expedition in 1671, Ray stayed with Ralph at Brignall in North Yorkshire on his tour of Northern England with fellow naturalist Thomas Willisel (1621-c1675) (Raven, 1942). Ray (1690) describes Ralph as: "...My great friend and expert in natural history...". The latter made the first Yorkshire sightings of thirty-three species of birds (Nelson, 1907) and an important contribution to Willughby's'classic *Ornithologia,* published by Ray in 1676 (Willughby & Ray, 1678), four years after Willughby's death. Ralph also contributed to Ray's

Floras and to *Historia Piscium*, begun by Willughby, completed by Ray and published in 1686 by The Royal Society. Very significantly, in a letter to Ray dated 29 Oct. 1686 (Lankester, 1848), Ralph suggested that Ray should order his *Floras* (Ray, 1686-1704) in a natural way rather than an artificial, alphabetical way and this was accepted by Ray (Ray, 1690). Of additional interest, Ralph botanised along Brignall Banks, an area well known to J.M.W. Turner, and was also a pioneer explorer of the flora of Upper Teesdale (Horsman, 1995, 1998, 2021).

We only know of John Johnson's interest in natural history from his observations on what has become known as Ray's Bream *(Brama brama),* and a shrimp, which were described in Ralph's letter to Ray of 15 January, 1674 (Lankester, 1848):

> '...If you have not yet determined what those shells on old planks and ships (which antiquity fancied to be young goslings) are, give me leave to propound one conjecture among many, viz. that they are the spawn of shrimps. It was my brother Jo. Johnson/s observation, who told me, that so far as his naked eye could discover, there was an exact proportion of parts betwixt the contents of those shells and the shrimp...'

However, it was not until 15 September, 1685, that he caught for Ray the "Liparis called in Durham and Yorkshire the Sea Snail" *(Liparis liparis)* "and very accurately described it - especial attention being given to the ventral sucker". A drawing of this snailfish by John was sent up to Ray by Ralph (Raven, 1942) together with John's drawing (above) of what became known as Ray's Bream. The latter specimen was obtained by John on 18 September, 1681, "washed up

in the Middlesbrough marshes near the mouth of the Tees" (Willughby & Ray, 1686; Raven, 1942). It was new to science and was "the most interesting of the new species, the 'Brama marina cauda forcipata' in the *Historia Piscium"* (Raven, 1942).

That the Johnsons, an isolated family in rural North Yorkshire, well off the beaten track, should be possessed of such talent and contribute significantly to the work of John Ray is certainly worthy of recognition.

References

Horsman, F. (1995) Ralph Johnson's notebook. *Archives of Natural History* 22(2):147-167.

Horsman, F. (1998) *Botanising in Linnaean Britain: a study of Upper Teesdale in Northern Britain*. Ph.D thesis, Durham University.

Horsman, F. (2005). *William Oliver ca. 1761-1816 Surgeon Apothecary and Botanist of Middleton-in-Teesdale.* The Teesdale Record Society.

Horsman, F. (2021) *"Who discovered the "Teesdale rarities?".* Self-published. Johnson, R. (1665) *The Scholar's Guide,* London.

Johnson, R. (1665) *The Scholar's Guide*. London.

Lankester, E. (ed.) (1848) *The Correspondence of John Ray.* London.

Nelson, T.A. (1907) *The Birds of Yorkshire. A Historical Account of the Avifauna of the County.* 2 vols. London.

Raven, C.E. (1942) *John Ray. Naturalist. His Life and Works.* Cambridge.

Ray, J. (1686-1704) *Historia Plantarum.* London.

Ray, J. (1690) *Synopsis Methodica Stirpium Britannicarum.* London.

The Ray Society (2023). *The Ray Society - Its History and Aims*. Available at https://www.raysociety.org.uk/history. Accessed 27/06/2023.

Willughby, F. and Ray, J. (1678) *The Ornithology of Francis Willughby.* London.

Willughby, F. and Ray, J. (1686) *Historia Piscium*. London.

Additions and corrections to the Yorkshire Diptera list (part 11)

Andrew Grayson
Scardale, High Lane, Beadlam, Nawton, York YO62 7SX

Introduction and Acknowledgements

In respect of the following additions and corrections to the Yorkshire Diptera list, the writer (AG) is principally indebted to Ian Andrews (IJA), John Coldwell (JDC) and Julian Small (JOHS). Derek Whiteley supplied the Thrybergh Tip record of *Chrysotoxum verralli*, and Rob Staniland gave permission to publish some details of the *Botanophila* records.

Under Syrphidae, it is appropriate to mention some hoverflies that are mapped from Yorkshire 10km squares on the website of the national Hoverfly Recording Scheme (HRS), which is accessible via the Dipterists Forum website https://dipterists.org.uk.

In addition to the species mentioned below, Barry Warrington's studies of leaf-mining Diptera in the family Agromyzidae continue to produce species that are new to the county, as do Sam Buckton's studies of gall-causers which include Diptera in the family Cecidomyiidae. Barry and Sam's findings are published in their own papers.

Additions and re-instatements to the Yorkshire Diptera list

MYCETOPHILIDAE
Docosia fumosa Edwards, 1925: VC63: Dodworth (garden), SE3105, 10.vi.2021 (♀) JDC.

THEREVIDAE
Thereva plebeja (Linnaeus, 1758): VC61: Bishop Wilton Wold, SE805555, 30.v.2021 (♀ swept from short grass on open, steep, south-facing chalky slope) IJA (teste M. Harvey). This is a re-instatement to the county list. *T. plebeja* was provisionally excluded by Grayson (2006: 85-86) as no authentic Yorkshire material was then known, and extant specimens standing under the name *T. plebeja* had proved to be other species of Therevidae.

HYBOTIDAE
Tachydromia smithi Chvála, 1966: recorded from Yorkshire by JOHS. The record details are on iRecord https://irecord.org.uk.

SYRPHIDAE
Cheilosia caerulescens (Meigen, 1822): VC63: Dodworth (garden, on Hogweed *Heracleum sphondylium*), SE3105, 03.viii.2022 (♂) JDC. The HRS maps additional Yorkshire records from SE23 (2022), SE35 (2021), SE37 (2021) and SE74 (2021). According to the HRS website, *C. caerulescens* soon became widespread in Britain following its discovery in 2007. Its larvae are horticultural pests that mine the leaves of houseleeks (*Sempervivum* species).
Chrysotoxum verralli Collin, 1940: VC63: Hatfield Moors, 12-22.vii.2022 (♀ ex Malaise trap) JOHS; Thrybergh Tip, SK49, 10.vii.2016 (specimen and photographs), P. Leonard det. A. N. R. Godfrey (Sorby Natural History Society records). The HRS maps additional Yorkshire records from SE62 (2013) and SE50 (2020). *C. verralli* has proliferated and expanded its British range during recent years, and was probably absent from Yorkshire until the current century. A record from 1989 resulted from a transcription error (Grayson, 2006: 87).
Eristalis similis (Fallén, 1817): the HRS considers this hoverfly to be an occasional immigrant to Britain, and maps it from five Yorkshire 10km squares, viz. SE15 (2021), SE83 (2018), SE34 (2021), SE49 (2021) and SE54 (2021).
Xanthogramma pedissequum (Harris, [1776]): the HRS considers *X. pedissequum* to be rare in northern England, and maps a single VC63 Yorkshire record from SE50 (2007).

TEPHRITIDAE
Urophora* (*Urophora*) *solstitialis (Linnaeus, 1758): VC61: North Cave Wetlands, SE879325, 05.viii.2022 (♂♀ swept from Musk Thistle *Carduus nutans*) IJA (teste AG). This is a re-instatement to the Yorkshire list. *U.* (*U.*) *solstitialis* was provisionally excluded from the county list by Grayson (2019: 149) as it was likely that all 19th and 20th Century Yorkshire records were misidentifications of other *Urophora* species: there were no records from recent decades.

LAUXANIIDAE
Sapromyza* (*Sapromyzosoma*) *quadricincta Becker, 1895: VC63: Old Moor, SE4204, 31.vii.2021 (♀) JDC. This is a re-instatement to the Yorkshire list. An earlier record resulted from a computer input error (Grayson, 2006: 89).

SPHAEROCERIDAE
Spelobia pseudonivalis (Dahl, 1909): VC61: Cali Heath, SE751498, 21-22.ii.2022 (♀ ex funnel-trap down rabbit-hole) IJA det. D. Brice.

ANTHOMYIIDAE
Anthomyia pluvialis (Linnaeus, 1758): VC63: Elsecar Colliery, SE3900, 16.vi.2015 (♀) JDC; Old Moor, SE4204, 13.viii.2021 (♂) JDC. This is a re-instatement to the Yorkshire list; accepted on the basis that JDC is confident of his identifications, having consulted the revision of European *Anthomyia* by Michelsen (1980). *A. pluvialis* was provisionally excluded by Grayson (2020: 63).
Botanophila biciliaris (Pandellé, 1900): VC62: a private site in the Whitby area featuring grassland surrounding four ponds, tetrad NZ80X, 17.v.2022 (♂) AG. Sweep-sampling the same site on 17.v.2022 also produced males of three other *Botanophila* species that are new to VC62, viz. *B. discreta* (Meigen, 1826), *B. sericea* (Malloch, 1920) and *B. striolata* (Fallén, 1824).

CALLIPHORIDAE
Bellardia bayeri (Jacentkowský, 1937): VC63: Dodworth (garden), SE3105, 31.vii.2022 (♂ pootered off Hogweed *Heracleum sphondylium*) JDC.

TACHINIDAE
Hemyda vittata (Meigen, 1824): VC61: Allerthorpe Common, SE755480, 02.x.2022 (♂ basking on oak *Quercus*) IJA.

Exclusions from the Yorkshire Diptera list

SYRPHIDAE
Xylota abiens Meigen, 1822. The distribution map on page 166 of Ball *et al.* (2011) has a VC62 10km 'dot' for this species from the period 1985-1999; however, this was presumably in error, as it is omitted from the current distribution map on the HRS website which maps 10km squares around, but not within, the Yorkshire county border. In the field, *X. abiens* is easily overlooked amongst other superficially similar hoverflies, especially *Chalcosyrphus* (*Xylotina*) *nemorum* (Fabricius, 1805). It is likely to occur in Yorkshire, but has yet to be discovered.

SCATHOPHAGIDAE
Parallelomma vittatum (Meigen, 1826). Cheetham (1921: 412) recorded *Paralleloma vittata* [sic] from Chapel-le-Dale, but the specimen was later referred to *Parallelomma paridis* Hering, 1923 by Collin (1958: 40). Both *Parallelomma* species were subsequently recorded from Spiggot Hill near Malham Tarn in early June 1982 by an attendee of a course run by Henry Disney: these records require clarification before full acceptance.

References

Ball, S. G., Morris, R. K. A., Rotheray, G. E. & Watt, K. R. (2011) *Atlas of the Hoverflies of Great Britain (Diptera, Syrphidae).* Wallingford: Biological Records Centre.

Cheetham, C. A. (1921) Additions to Yorkshire Diptera List. *The Naturalist* [46]: 409-412.
Collin, J. E. (1958) A short synopsis of the British Scatophagidae (Diptera). *Transactions of the Society for British Entomology* 13: [37]-56.
Grayson, A. (2006) Additions and corrections to the Yorkshire Diptera list (Part 2). *The Naturalist* 131: 83-93.
Grayson, A. (2019) Additions and corrections to the Yorkshire Diptera list (part 8). *The Naturalist* 144: 144-151.
Grayson, A. (2020) Additions and corrections to the Yorkshire Diptera list (part 9). *The Naturalist* 145: 58-65.
Michelsen, V. (1980) The *Anthomyia pluvialis* complex in Europe (Diptera, Anthomyiidae). *Systematic Entomology* 5: 281-290.

YNU Bryological Section: Report for 2022

T.L. Blockeel
9 Ashfurlong Close, Dore, Sheffield S17 3NN
email: Tblockeel@aol.com

Excursions

Two sectional meetings were held in 2022 and are reported below. Nomenclature follows the latest British and Irish Census Catalogue (Blockeel *et al.*, 2021), which introduces a number of name changes from the previous edition.

Spring meeting. River Rawthey and Uldale (VC 65), 7 May 2022

The River Rawthey, forming the boundary with Westmorland along part of its course, has long been known to be a rich bryological locality, with both acidic and base-rich rocks, and this meeting was an opportunity to update the records. We walked in via the footpath from Rawthey Bridge but did not begin serious recording until we reached tetrad SD79I on the slopes opposite Needle House, and there was enough interest in this tetrad alone to occupy us for the whole of the day. Initially much of the ground was mildly acidic, and records included *Marsupella emarginata*, *Bartramia pomiformis* and *Heterocladium heteropterum* on siliceous rocks, and *Hyocomium armoricum* in the stream. Species indicating increased base-enrichment included *Mesoptychia* (*Leiocolea*) *collaris*, *Metzgeria pubescens*, *Tritomaria quinquedentata*, *Amphidium mougeotii*, *Tortella tortuosa* and *Gymnostomum aeruginosum*, the latter trying its best to imitate *Hymenostylium recurvirostrum*. Locally, *Climacium dendroides* and *Breutelia chrysocoma* were present in moist and flushed turf. A number of small seepages and flushes emerged on the slopes above the stream, and here Christine Kelly picked up one of the best finds of the day, *Hamatocaulis vernicosus*, the first record in VC 65 since the 1960s. *Sarmentypnum exannulatum* also occurred in these flushes. Other records in monad SD7296 included a little *Mylia taylorii* (among gritstone rocks), *Frullania tamarisci*, *Schistochilopsis incisa* and *Bryum julaceum*.

Most of the afternoon was spent in the next monad SD7396, where we soon encountered *Hygrobiella laxifolia* growing in thin patches on rock slabs below a crag near the stream. Nearby

there was a line of very fine, wet and moderately base-rich crags. Notable here were a few tufts of the very handsome *Bartramia halleriana*, an upland species in Britain and here near the edge of its range. The wet crags also supported *Marchantia quadrata*, *Blindia acuta*, *Bryum zieri*, *Campylium protensum*, *Isopterygiopsis pulchella*, *Mnium marginatum* and *Orthothecium intricatum*. We were also pleased to see a fine patch of *Loeskeobryum brevirostre* on a grassy ledge. Wet vertical rock walls by one of the waterfalls along this part of the river had *Chionoloma tenuirostre* var. *holtii*. Nearby *Jungermannia eucordifolia* occurred on rock at the edge of the stream, and *Scorpidium revolvens* in a flush.

We had no time to examine the crags and waterfalls upstream in SD7395, and these would surely have produced additional records. Nevertheless our list for the day totalled an impressive 131 species.

Autumn meeting. Ogden Reservoir and Clough (VC 63), 2 October 2022

The venue at Ogden provided an opportunity to explore the exposed margins of a typical Pennine reservoir, as well as a moorland clough known to have wet crags with significant base-enrichment. At the reservoir (monad SE0631), a by-product of the hottest summer on record was the exposure of extensive flats of peaty mud, and thus an opportunity to see the bryophyte flora of this ephemeral habitat in prime condition. Characteristic species of the peaty mud included *Fossombronia wondraczekii*, *Riccia sorocarpa*, *Archidium alternifolium*, *Ephemerum stoloniferum* (formerly *E. serratum*), *Pohlia bulbifera*, *P. camptotrachela* and *Pseudephemerum nitidum*. These bryophytes are propagated from year to year in this temporary habitat either by the rapid production of spore capsules, or by means of vegetative propagules. Particularly notable in this community was the presence of *Atrichum tenellum*, in only the second locality for VC 63. Small quantities of *Bryum klinggraeffii* and *B. tenuisetum* were also recorded, and *Calliergon cordifolium* occurred in a patch of wet ground under trees. Among the epiphytes growing on the Sallows at the reservoir edge was *Ulota calvescens*.

On our way through the woodland in Ogden Clough in monad SE0531 we were able to confirm the continued presence of *Daltonia splachnoides* on the Sycamore tree on which it was found in 2017. *Daltonia* has a hyper-oceanic distribution and it was found unexpectedly in Calderdale by Johnny Turner in 2017, being new to England at the time. Johnny first found it at Hebden Bridge, and the small population at Ogden was discovered soon afterwards, still its easternmost British locality. In the clough itself, we concentrated our efforts on banks where the seepage of base-rich water supports a flora very different from that found on the surrounding gritstone. We were keen to re-find the liverwort *Moerckia flotoviana* long known from this site, which is probably its only surviving locality in the South Pennines. After searching unsuccessfully on a tufa bank, we eventually located some fine patches on a low, wet crag. Also notable nearby was *Bryum* (*Plagiobryum*) *zieri*, a very rare moss on the Millstone Grit, occurring more widely on upland limestones. The crags also supported *Conocephalum salebrosum*, *Jungermannia atrovirens*, *Amphidium mougeotii*, *Blindia acuta*, *Gymnostomum aeruginosum*, *Hookeria lucens* and *Palustriella commutata*. The stone blocks of a retaining wall had *Blindiadelphus recurvatus*, and we recorded *Marsupella emarginata* on acid gritstone. *Hyocomium armoricum* and *Hygrohypnella ochracea* were plentiful in the stream, while moist, gritty soil banks had *Solenostoma gracillimum* and *Dicranella rufescens*. There was some *Cephalozia curvifolia* in its usual habitat on rotting wood. *Sphagnum* species on wet banks included *S. girgensohnii* and *S.*

russowii. The combined total of species for the day was 112.

The year's records

The number of records received for 2022 from each of the Watsonian vice-counties is shown here.

Vice-county	Records received
61	96
62	773
63	406
64	661
65	185

The British Bryological Society held its AGM at Middlesbrough in September 2022, and the weekend included a field excursion to the coastal habitats at South Gare on Teesside, organised by Ambroise Baker. Before the AGM, several members spent a few days recording in the North York Moors National Park, and this further boosted the number of records. Much of the ground at South Gare is covered by industrial waste from the former steel works, which now provides some very interesting habitat. Of special note was the discovery of *Encalypta rhaptocarpa* on a 'cliff' of solidified slag. This *Encalypta* is chiefly a plant of montane habitats in Britain but it occurs on coastal sand at a few places in Scotland and on Holy Island. The population at South Gare is notable, therefore, as a significant extension to the distribution of the species in coastal habitats, as well as for its ecology on industrial waste. A second very welcome discovery at South Gare was *Bryum warneum*, a moss of dune slacks that has undergone a serious historical decline and is classified as Endangered in the latest British Red List (Callaghan, 2023). It occurred formerly at Coatham and Saltburn but had been considered extinct in Yorkshire. Other notable records at South Gare included *Rhynchostegium megapolitanum* (a new VC record), *Lophozia excisa*, *Aloina ambigua*, *Distichium inclinatum* and *Drepanocladus polygamus*.

Participants in the informal gathering before the AGM weekend were Claire Halpin, Peter Martin, Sharon Pilkington, Chris Preston and Jonathan Sleath. They visited Greenhow Plantation and Moor, Cod Beck Reservoir near Osmotherley, and Kepwick Quarry and Dunsforth's Hill on the Hambleton Hills. At Greenhow they walked up through the Plantation to the known locality for *Mielichhoferia elongata*, one of a small number of 'copper mosses' tolerant of heavy metals and high acidity, occurring here at one of its three British sites. En route they recorded *Discelium nudum*, a very scarce colonist of bare, acidic, clay-based soils, with very few records in VC 62. Their other finds at Greenhow included *Scapania irrigua*, *S. scandica*, *Brachydontium trichodes* and *Polytrichastrum alpinum*. They subsequently recorded the latter species at both Cod Beck and Kepwick; it is clearly much under-recorded in the vice-county. Outstanding at Kepwick was *Seligeria calycina*, a tiny moss of calcareous rocks, previously known in Yorkshire only from the chalk in VC 61. Other finds at Kepwick included *Bryum elegans* on a rock ledge in the old quarry (new to VC 62), *Weissia brachycarpa* var. *obliqua* on a spoil-heap, and many other scarce calcicolous bryophytes, cited in the records below. On Dunsforth's Hill they recorded *Sphenolobus minutus* for the first time for more than 100 years in VC 62. This liverwort grows on acidic substrates and is very scarce in northern England.

An informal meeting in Sleightholmedale in March 2022 provided further interest in VC 62. There is woodland with calcareous rock outcrops at Mell Bank, and here *Oxyrrhynchium schleicheri* was found on a roadside bank, the first modern VC record for this mainly southern moss. *Campylophyllopsis calcarea* and *Schistidium elegantulum* were notable species on the shaded rock outcrops within the woodland, the latter being a new VC record.

These activities in North-east Yorkshire demonstrate that there is still much to be discovered in VC 62. Elsewhere in Yorkshire, Gordon Haycock has continued his recording in Wharfedale, finding new localities for *Plagiochila britannica*, *Schistochilopsis incisa* and *Blasia pusilla*, the latter an elusive and often temporary colonist of bare, moist, acidic ground. In north-west Yorkshire (VC 65), Ian Diack visited the western end of the Frostrow Fells near Millthrop and found two rare wetland species, *Sarmentypnum sarmentosum* and *Sphagnum platyphyllum*, prompting plans to explore this area further in 2023. John O'Reilly submitted some recent records from surveys in Yorkshire, including a new locality for *Sphagnum angustifolium* on Great Shunner Fell, and confirmation that *Cinclidium stygium* is still present on Cronkley Fell. Steven Heathcote has made further visits to the Brockadale Reserve, finding *Oxyrrhynchium speciosum* there, new to VC 63.

Leucobryum is a very distinctive genus of mosses, but the two species previously known in Britain have not always been easy to identify. A recent paper (Ottley *et al.*, 2023) has shown that in fact three species are present in Britain, and this explains much of the earlier confusion. The third species is *L. albidum*, and it has been confirmed to date from just one Yorkshire locality. All previous records of *L. glaucum* and *L. juniperoideum* cannot be considered reliable in the absence of specimens, and recording of the three species should begin again.

Selected records

The list below provides details of selected records, including new vice-county records and updates to the national Census Catalogue (identified by an asterisk). The vice-county is given in brackets before each individual record.

Abietinella abietina: (64) SE323629 Burton Leonard Nature Reserve, S.J. Heathcote, 3 June 2022. Confirmation of the continued presence of this species at one its two known extant Yorkshire localities

Aloina ambigua: (62*) NZ565262 ledge of crag formed by solidified slag, South Gare, near Redcar, A. Vanderpoorten, 11 September 2022.

Bazzania trilobata: (62) SE48789164 Kepwick Quarry, C. Halpin *et al.*, 9 September 2022.

Blasia pusilla: (64) SD91847707 Low Combe Stoop, G. Haycock, 12 October 2022.

Brachydontium trichodes: (62) NZ59290208 Greenhow Plantation, C. Halpin et al., 7 September 2022.

Bryum algovicum* var. *rutheanum: (62) NZ56542609 industrial waste, South Gare, near Redcar, BBS meeting, 11 September 2022.

***Bryum elegans*:** (62*) SE4869191871 rock ledge, Kepwick Quarry, P. Martin, 9 September 2022.

Bryum pallescens: (62*) SE46209846 drip zone of galvanised metal fence below dam, Osmotherley, Cod Beck Reservoir, S. Pilkington, 8 September 2022. Many records of this metal-tolerant moss are from the ground below metal structures.

Bryum warneum: (62*) NZ56282675 in a damp depression on sandy/blast furnace waste soil, South Gare, near Redcar, J.D. Sleath, 11 September 2022.

Campylophyllopsis calcarea: (62) SE66648883 Mell Bank Wood, Sleightholmedale, S.J. Heathcote,T.L. Blockeel *et al.,* 12 March 2022.

Chionoloma tenuirostre* var. *holtii: (65*) SD73049641 on wet crag in ravine below waterfall, River Rawthey near Uldale House, 7 May 2022, T.L. Blockeel 51/060. *Chionoloma tenuirostre* is widely recorded in the Pennines; the var. *holtii* has recently been re-instated but is not well-defined morphologically and remains problematic.

Cinclidium stygium: (65) NY8475328813 M37 flushes, Skue Trods, Cronkley Fell, J. O'Reilly, 12 September 2022. Though long known in Upper Teesdale, this rare wetland moss has apparently not been confirmed on Cronkley since 1958.

Cinclidotus fontinaloides: (61) SE69674401 and SE69544410 River Derwent at Wheldrake Ings, S.J. Heathcote, 18 October 2022. Although *Cinclidotus* is a common sub-aquatic moss in the uplands, this is only the second modern record for VC 61.

Dicranum bonjeanii: (62) SE4856191944 Kepwick Moor, P. Martin, 9 September 2022.

Discelium nudum: (62) NZ59340207 Greenhow Moor, C. Halpin *et al*., 7 September 2022.

Drepanocladus polygamus: (62) NZ57592554 and NZ57672577 in dune slacks, South Gare, near Redcar, BBS meeting, 11 September 2022.

Encalypta rhaptocarpa: (62*) NZ56502621 on ledge of 'crag' formed by hard slag-based waste, South Gare, near Redcar, T.L. Blockeel & A. Vanderpoorten, 11 September 2022.

Encalypta vulgaris: (62) SE4891 Kepwick Quarry, C. Halpin *et al*., 9 September 2022.

Entodon concinnus: (62) SE48619143 Kepwick Quarry, C. Halpin *et al*., 9 September 2022; (64) SD9764 Threshfield Quarry, J.O'Reilly, 10 October 2016.

Fissidens gracilifolius: (62) SE66718848 on base-rich rock face, Mell Bank Wood, Sleightholmedale, S.J. Heathcote, T.L. Blockeel *et al.* 12 March 2022.

Flexitrichum flexicaule: (62) SE4878191507 Kepwick Quarry, P. Martin, 9 September 2022.

Flexitrichum gracile: (62) SE4891 Kepwick Quarry, C. Halpin *et al*., 9 September 2022.

Fossombronia pusilla: (62) SE66498834 field between Hodge Beck and Mell Bank Wood, Sleightholmedale, S.J. Heathcote, T.L. Blockeel *et al.*, 12 March 2022.

Frullania tamarisci: (62) SE4891 Kepwick Quarry, C. Halpin *et al*., 9 September 2022.

Hamatocaulis vernicosus: (65*) SD72869664 in flush along path, R Rawthey, Uldale, Christine Kelly with YNU, 7 May 2022.

Hennediella stanfordensis: (61*) TA0239 on soil in rabbit warren, Beverley Westwood, Newbegin Pits, W.R. Dolling, det. T.L. Blockeel, March 2022. Thought to be an introduced moss, *H. stanfordensis* is an inconspicuous colonist of bare soil and it remains little recorded in Yorkshire.

Hygroamblystegium humile: (63) SE51501698 Brockadale Nature Reserve, S.J. Heathcote, 3 May 2022.

Lejeunea lamacerina: (63) SK17769211 moist gritstone, Abbey Brook, Upper Derwent Valley, T.L. Blockeel & A.J. Hodgson, 31 August 2022. There is only one previous record (in 1988) of this small liverwort in the Yorkshire part of the Upper Derwent moors.

Leucobryum albidum: (64*) SE0656 east bank of R. Wharfe, near The Strid, Bolton Woods, April 1983, T.L. Blockeel & M.O. Hill (BBSUK).

***Leucobryum juniperoideum* s.str.**: (64*) SD7074 on earthy woodland bank in ravine, Twisleton Glen, Ingleton, 10 August 2012, T.L. Blockeel 42/636 (specimen in BBS herbarium). At the time of writing, this is the only confirmed Yorkshire record of the re-defined *L. juniperoideum*, but it is likely to occur more widely.

***Leucobryum glaucum* s.str.**: (62*) SE94919875 on the ground in wooded stream valley, Helwath Wood, Jugger Howe, 2 October 2021, T.L. Blockeel 50/157; (65*) SD68309742 turfy edge of Silurian rock in ravine below waterfall, Cautley Spout, Howgill Fells, 14 August 2021, T.L. Blockeel 50/114. These are the first two confirmed Yorkshire records of the re-defined *L.*

glaucum. It is very likely to be the common *Leucobryum* in the region.

Lophozia excisa: (62*) NZ557271 On flat soil in 'fell-field' derived from industrial waste, South Gare, near Redcar, M.O. Hill & A. Vanderpoorten, 11 September 2022.

Marchantia quadrata: (62) SE4891 Kepwick Quarry, C. Halpin et al., 9 September 2022.

Mesoptychia badensis: (62) NZ56252666 on moist sand, South Gare, near Redcar, A. Vanderpoorten, 11 September 2022; (64) SD9665 and SD9764 Threshfield Quarry, J. O'Reilly, 10 October 2016. This small liverwort colonises open calcareous habitats and is often found in old quarries.

Mesoptychia turbinata: (62) SE66578842 Hodge Beck, and SE66668881 Mell Bank Wood, Sleightholmedale, S.J. Heathcote, T.L. Blockeel et al., 12 March 2022.

Microbryum davallianum: (63) SE50361740 Brockadale Nature Reserve, Snail Crag, S.J. Heathcote, 28 March 2022.

Microeurhynchium pumilum: (61) TA0239 concrete block under trees, Beverley Westwood, Newbegin Pits, W.R. Dolling, March 2022.

Myriocoleopsis minutissima: (61) SE69444447 River Derwent at Wheldrake Ings, S.J. Heathcote, 18 October 2022; (62) SE65518971 Slades Wood, Sleightholmedale, S.J. Heathcote, T.L. Blockeel *et al.*, 12 March 2022. This tiny epiphytic liverwort, once confined to southern and western coastal areas, has recently colonised much of Yorkshire, but it remains scarce in the eastern vice-counties.

Oxyrrhynchium schleicheri: (62*) SE66648887 soil over calcareous stones on wooded roadside bank, Mell Bank Wood, Sleightholmedale, T.L. Blockeel, 12 March 2022.

Oxyrrhynchium speciosum: (63*) SE50611713 locally frequent on soil, grassland on floodplain of R. Went, Brockadale Nature Reserve, Compartment 20, S.J. Heathcote, 28 March 2022.

Philonotis calcarea: (62) SE4857492054 Kepwick Moor, P. Martin, 9 September 2022, and SE4891 Kepwick Quarry, C. Halpin *et al.*, 9 September 2022.

Physcomitrium pyriforme: (63) SE51471698 Brockadale Nature Reserve, Compartment 15c, S.J. Heathcote, 12 April 2022.

Plagiochila britannica: (64) SD96047689 Starbotton, G. Haycock, 13 October 2022; (64) SD99177278 Providence Pot, G. Haycock, 29 October 2022.

Plagiomnium elatum: (62) SE4891 Kepwick Quarry, C. Halpin *et al.*, 9 September 2022; (64) SD94297913 Cray, G. Haycock, 25 May 2022; (65) NY8125 Mickle Fell, S. Jones & J. O'Reilly, 28 September 2015.

Plagiothecium denticulatum* var. *denticulatum: (61) SE69414433 River Derwent at Wheldrake Ings, S.J. Heathcote, 18 October 2022. An acidophile moss that may be declining, especially in the lowlands, from nutrient enrichment and reduced acidity.

Pohlia cruda: (62) SE48789164 north-facing slope, Kepwick, Dunsforth's Hill, S. Pilkington, 9 September 2022.

Polytrichastrum alpinum: (62) NZ59600280 Greenhow Moor, C. Halpin *et al.*, 7 September 2022; (62) NZ5901 Greenhow Moor, C. Halpin *et al*., 7 September 2022; (62) NZ59580199 Greenhow Plantation, C. Halpin, 7 September 2022; (62) SE48789164 Kepwick Quarry, C. Halpin *et al.*, 9 September 2022; (62) SE4699 Osmotherley, Cod Beck Reservoir, C. Halpin *et al*., 8 September 2022.

Polytrichum longisetum: (62) NZ5916502090 Greenhow Plantation, P. Martin, 7 September 2022.

Rhynchostegium megapolitanum: (62*) NZ57742581 on side of grey dune, South Gare, near Redcar, S. Pilkington, 11 September 2022, and NZ5626 in long grassy vegetation on sand dune, South Gare, near Redcar, T.L. Blockeel, 11 September 2022.

Riccia cavernosa: (63) SE232052 exposed mud of reservoir, Scout Dyke Reservoir, J. Lunn, 26 October 2022. A characteristic liverwort of exposed reservoir margins in the lowlands and on the Pennine fringes, but very rare in other habitats. This is apparently the first record for Scout Dyke.

Sarmentypnum sarmentosum: (65) SD6678890709 springhead, above Millthrop, Sedbergh, I. Diack, 16 May 2022. This wetland moss with attractive vinous-red shoots reaches the edge of its British range in the north-western parts of Yorkshire, where it is scarce. It is unknown in the South Pennines.

Scapania irrigua: (62) NZ58830246 Greenhow Plantation, C. Halpin, 7 September 2022.

Scapania scandica: (62) NZ58830246 Greenhow Plantation, C. Halpin, 7 September 2022.

Schistidium elegantulum: (62*) SE66678888 calcareous stones on woodland floor, Mell Bank Wood, T.L. Blockeel, 12 March 2022.

Schistochilopsis incisa: (64) SD91477694 Buckden, G. Haycock, 12 October 2022; (64) SD93308005 Cray, G. Haycock, 28 October 2022.

Scorpidium cossonii: (62) SE4891 Kepwick Quarry, C. Halpin *et al*., 9 September 2022, and SE4857492054 Kepwick Moor, P. Martin, 9 September 2022. A characteristic moss of base-rich mires.

Seligeria calycina: (62*) SE48709190 loose stone of calcareous Jurassic sandstone in dry gully, Kepwick, Dunsforth's Hill, C.D. Preston, 9 September 2022.

Sphagnum angustifolium: (65) SD842969 Great Shunner Fell, J. O'Reilly, 8 August 2016.

Sphagnum medium: (64) SD93147984 very wet valley mire, Low Pasture, Cray, G. Haycock, 12 October 2022.

Sphagnum platyphyllum: (65) SD6678890709 springhead, also in nearby soaks and flushes, above Millthrop, Sedbergh, I. Diack, 16 May 2022. This rare (or perhaps under-recorded) *Sphagnum* has very few Yorkshire records. It occurs in flushes and seepages with some mineral enrichment, often growing with *Scorpidium* spp.

Sphenolobus minutus: (62*) SE48789164 with *Leucobryum* on north-facing slope on side of acidic gully, Dunsforth's Hill, Kepwick Moor, C.D. Preston, 9 September 2022.

Splachnum ampullaceum: (64) SD9049566365 near Great Close Plantation, Malham, and SD9096365643 near Mastiles Lane, Malham, C. Kelly, June 2022. Though long-known from the Malham area, it is good to have confirmation of the continued presence of this distinctive moss. It is dependent on decaying dung (typically of cattle) in wetland habitats.

Syntrichia papillosa: (61) SE69374495 River Derwent at Bank Island, S.J. Heathcote, 18 October 2022. Second recent record in VC 61 of this rather scarce epiphyte.

Syntrichia ruraliformis: (62) NZ5626 and NZ5725 South Gare, near Redcar, BBS meeting, 11 September 2022; (63*) SE7200322095 concrete surface of bridge used mainly as footpath, Oakhill Nature Reserve, Goole, 11 January 2022, S.J. Heathcote. This characteristic species of coastal sand dunes has become more common recently in ruderal habitats inland.

Syntrichia ruralis* var. *epilosa: (64*) SD83636569 small stones set in grassland, Winskill Stones, 21 February 2022, S.J. Heathcote. This variety of *S. ruralis*, lacking hyaline hair-points, has only recently been recognised in Britain. This is the first Yorkshire record.

Taxiphyllum wissgrillii: (62) SE66648887 and SE66668887 Mell Bank Wood, Sleightholmedale, S.J. Heathcote, T.L. Blockeel *et al*., 12 March 2022.

Ulota crispa* s.str.*: (62) SE4620698620 Osmotherley, Cod Beck Reservoir, P. Martin, 8 September 2022.

Ulota intermedia: (62*) SE46359844 on *Acer pseudoplatanus* trunk, Osmotherley, Cod Beck Reservoir, S. Pilkington, 8 September 2022.

Weissia brachycarpa* var. *obliqua: (62*) SE48759145 on soil of grassed-over limestone spoil heap,Kepwick Quarry, J.D. Sleath & C.D. Preston, 9 September 2022.

Thanks are due to all the contributors of records.

References

Blockeel, T.L., Hodgetts, N.G. Pilkington, S.L. & Pescott, O.L. (2021). A census catalogue of British and Irish Bryophytes 2021. British Bryological Society.

Callaghan, D.A. (2023 ['2022']). A new IUCN Red List of the bryophytes of Britain, 2023. *Journal of Bryology*, 44: 271–389, DOI: 10.1080/03736687.2023.2185393.

Ottley, T. Kučera, J., Blockeel, T. & Langton, J. (2023). A molecular and morphological study of *Leucobryum* in Britain and Europe: the presence of *L. albidum* (P.Beauv.) Lindb. confirmed. *Journal of Bryology* 45: 1–29, DOI: 10.1080/03736687.2023.2188389.

Walrus in Scarborough Harbour: with notes on other occurrences in the North Sea

Colin A. Howes

Email: colinhowes@blueyonder.co.uk

New modern Yorkshire record

At around 23.30 hrs GMT on 30 December 2022 a sub adult male Walrus *Odobenus rosmarus* entered Scarborough Harbour and spent most of New Year's Eve hauled out and asleep on the West Pier slipway, returning to the water to continue its journey at about 16.30hrs on 31 December (Internet Ref. 1 & 2). A Walrus which occurred in the Wash (Lincolnshire) in September 1981 (Hall, 2008), swimming up the Great Ouse as far as Downham Market (Norfolk) (Mullard, 2022), could possibly have passed through Yorkshire coastal waters during its North Sea wanderings. However, the Scarborough specimen represents the first positive Yorkshire record for this arctic vagrant.

Historical review

Sub-fossil skeletal remains of Walrus from the northern North Sea basin have occasionally been dredged from the sea bed or found in terrestrial glacial boulder clay or morainic deposits. Two Yorkshire examples, a tusk and "a few perfect bones" were found in adjacent quarries in the morainic gravel beds of the "Scandinavian ice sheet" at Kelsey Hill, Holderness (TA2326) (Reid, 1885; Sheppard, 1899 & 1904). Although both were displayed in the geology gallery at Hull museum, they seem not to have survived enemy action during WW2. Initial attempts using carbon^{14} techniques at dating sub-fossil Walrus material in the context of the northern North Sea were based on tusk fragments from terrestrial sites in western Denmark. This showed dates from the Neolithic and more recent times, indicating materials had been imported by the ivory hand tool trade rather than establishing the presence of local Walrus populations (Møhl, 1974). However, to avoid the selective bias of the above mentioned archaeological specimens, carbon^{14} dating of three skulls dredged from the bed of the North Sea, two off Denmark and one off Holland and a skull from a quarry in Northern Jutland, gave dates ranging from 28,930 BC to 21,600 BC indicating that Walrus was part of the regional fauna in the pack ice at the edge of the retreating Weichselian/Devensian ice sheet during the early post glacial (Møhl, 1984). Further, a skull found in 2018 by Brett Thomson at the base of the boulder clay cliffs at Reighton, North Yorkshire and taken to the Rotunda Museum, Scarborough, was estimated to be 140,000 years old (Internet ref. 18). This would suggest an earlier Walrus population from

the North Atlantic had established in the pack ice somewhere along the edge of the ice sheet towards the end of the Wolstonian/Saalian glaciation.

Documented records of individual Walruses entering the North Sea and British coastal waters date back to one in the Thames in 1456 (Caxton, 1480; Bonner, 1964). The species was also convincingly described in the Orkneys pre-1536 (Boece, 1536) and the characterful Walrus head illustrated by Albrecht Dürer, in the collections at the British Museum, had been sketched from a Walrus corpse stranded at Zeeland on the Dutch coast during the artist's visit in 1520 (Stanska, 2016). During the 19th century 22 specimens had been seen or killed in Scottish waters from 1815 to 1877 (Richie, 1921) though many of these were on the Atlantic rather than the North Sea coasts. These historical records and the remarkably high mean frequency of one occurrence every 2.8 years through the 19th century could suggest an effect of the 'Little Ice Age' which saw the advance of the Greenland glaciers and more particularly the southerly advance of the North Atlantic pack ice (Grove, 2004). This could have brought Walrus breeding populations and dispersal closer to the British Isles.

For the 20th century, Mullard's (2022) review, lists 6 from the northern Isles and 2 from the Scottish North Sea coastline (the Moray Firth 1920 and Aberdeenshire 1954). In the 21st century occurrences have been listed in Shetland at Hascosay in July 2002 and the Boat of Breigo and Out Skerries in June 2018. In the Orkneys, one was off Ronaldsay in March 2013 and one in March 2018 when it also hauled out on Sanday (Mullard, 2022).

Now that digital cameras and camera phones have become ubiquitous, newsworthy wildlife curiosities have become simple, even an obligation to record and electronically disseminate. By this means, Walrus occurrences in the North Sea and adjacent waters have been well documented, not least in the social media. A particular benefit of this technology has enabled the identification and therefore the migratory movements of individual animals to be monitored by the extent of tusk growth and scarring patterns visible in photographs.

Recently monitored North Sea vagrants

Freya's Saga After spending several weeks along the North Sea coasts of Denmark and Germany, a young female Walrus, referred to in the press as Freya and identified by having short tusks, entered the Netherlands at Simonszand on 20 September 2021. She represented the 11th specimen to be recorded in the Netherlands, the last being in 1998 (Internet ref. 3). She returned to the German wadden island of Borkum on 23 September but from 26 September to 13 October was present, mainly in harbour sites of the Dutch islands of Schiermonnikoog, Engelse Hoek and Terschelling, then in the mainland harbour at Harlingen. From 26 October to 3 November she frequented the restricted territory of the Royal Netherlands Naval base at Den Helder where she was photographed hauled out on one of the moored submarines (appropriately a 'Walrus-class craft) (Internet refs. 3 & 4). By 14 November she had crossed the North Sea to the UK, being identified in Seahouses, where she was claimed as the first record for Northumberland (Internet ref. 5). The following day she progressed north and was positively identified in the Shetlands near Vementry, then in Ronas Voe (Mullard, 2022) where she remained at least till 23 December (Internet ref. 6). After re-crossing the North Sea, she was identified on 24 February 2022 in the harbour of Thorsminde, and at Hvide Sande on the Danish west coast (Internet ref. 7). She then made her way up the Norwegian coast, visiting harbours and marinas in the Oslo Fjord where she attracted large crowds of delighted, if over confident

onlookers, some of whom ventured dangerously close to the 1,300lb animal to take 'selfies'. In the absence of ice-flows, her habit of hauling out and basking on floating objects led to a trail of damaged and sunk small fishing and pleasure craft. On 14 August this behaviour and a perception amongst government officials that she posed a threat to members of the public, led to Freya being shot by the authorities. Freya is now commemorated by a rather fine life-sized bronze sculpture at Oslo's, Kongen marina, funded by public subscription (Internet refs. 8 & 9).

Sten's Saga In June 2022 a Walrus dubbed Sten, with much longer tusks entered the Kattegat and Baltic from the northern North Sea and was observed visiting beaches at Skälderviken, south-west Sweden, on 12 June, the German island of Rügen from 17 to 20 June and the coastal resort of Mielno, Poland on 27 June, representing the first Polish record (Internet refs. 10, 11 & 12).

Thor's Saga A sub-adult male which the media dubbed Thor was first noticed on the Dutch coast at Petten on 6 November 2022; he then moved to the artificial island of Neeltje Jans in Zeeland on 15 November. By 18 November he had travelled south to the French port of Dieppe, then crossed the English Channel and was photographed hauled out on the shingle beach at Calshot, Hampshire, in the early hours of 11 December (Internet ref. 13). Later that month Thor made his way back into the North Sea turning up in Scarborough Harbour at about 23.30hrs on 30 December. He spent the next day, New Year's Eve, hauled out on the West Pier slipway, attracting the attention of large crowds of revellers. Staff members from Scarborough's Sea life Centre, the RSPCA and the British Divers Marine Life Rescue (BDMLR) watched over Thor and answered queries from the public and media. Traffic and crowd control was managed by the Harbour Masters staff and North Yorkshire Constabulary and the Scarborough Town Council generously supported the animal welfare needs of the exotic visitor by cancelling the scheduled harbour-side New Year's Eve firework display. The animal was much photographed and videoed and featured widely in the press and on social media (Internet refs. 1 & 2). In the early afternoon of 2 January 2023 Thor was spotted, hauled out on the perimeter boating pontoon of the Royal Northumberland Yacht Club, Blyth where he was visited by hundreds of delighted sightseers. Again members of BDMLR answered public and media questions and stood guard till he left Blyth at about 06:45am on Tuesday 3rd. This was the final North Sea report and 53 days later, on 25 February a Walrus, identified as Thor by the BDMLR, was filmed basking on a floating pontoon at Breiðdalsvík on the east coast of Iceland (Internet ref. 13).

Possible origins of current vagrants

Currently Walrus populations in the North-east Atlantic region are restricted to populations north of latitude 70 °N on the north-east coast of Greenland (estimated population 1,429) (Born, *et.al.*, 2009), on the island archipelagos of Svalbard (estimated population 3,900) (Internet ref. 14) and Franz Josef Land in the Barents Sea, (estimated population 3,000 to 3,500) (Internet ref. 15), Vaygach Island in the Pechora Sea (estimated population 400) (Internet ref. 16) and in the estuary of the Tiutei-Yakha River flowing into the Kara Sea (estimated population 3,000-4,000) (Internet ref. 17). Although samples of these populations have been tagged, none of these individuals have so far been noticed in the North Sea or UK waters.

Acknowlegements

Thanks are due to Dr Africa Gomez for editorial comments and drawing attention to the seminal reference to the Kelsey Hill sub-fossil material in Sheppard (1899).

Internet references
1) Walrus spotted in Scarborough delights crowds on New Year's Eve in rare sighting (https://inews.co.uk/news/walrus-scarborough-new-years-eve-sighting-2058375
2) https://bdmlr.org.uk/the-return-of-thor
3) https://www.zoochat.com/community/threads/a-walrus-has-been-spotted-in-the-netherlands-for-the-first-time-in-23-years.481997/
4) https://www.theguardian.com/environment/2021/nov/03/walrus-leaves-arctic-comfort-zone-for-snooze-on-dutch-submarine
5) Arctic walrus spotted on Northumberland beach - BBC News. https://www.bbc.co.uk/news/uk-england-tyne-592114
6) https://www.instagram.com/shetlandwildlife
7) https://www.itv.com/news/search?q=freya-the-walrus
8) https://www.bbc.co.uk/news/world-europe-62539485
9) https://www.theguardian.com/world/2023/apr/29/sculpture-walrus-freya-unveiled-oslo-norway
10) https://cde.news/photo-story-rare-visit-by-walrus-in-skane-sweden/
11) polarjournal.ch/en/2022/06/20/walrus-visits-german-island-in-baltic-sea
12) thefirstnews.com/article/huge-arctic-walrus-spotted-on local-beach-first-ever-polish-sighting-31339
13) https://www.smithsonianmag.com/smart-news/the-unusual-european-journey-of-thor-the-walrus-180981734/
14) https://www.swoop-arctic.com/svalbard/wildlife
15) https://arctic.ru/environmental/20170920/678338.html
16) https://www.rgo.ru/en/article/mystery-pechora-walruses
17) https://arctic.ru/environmental/20221031/1011424.html
18) https://www.yorkshirepost.co.uk/news/leeds-man-finds-140000-year-old-walrus-skull-while-fossil-hunting-on-yorkshire-clifftop-643841

Literature references
Caxton, W. (1480) *Chronicles of England.* London.
Boece, H. (1536) *Historia Gentis Scotorum*. Edinburgh.
Bonner, W.N. (1964) Order Pinnipedia, Seals etc. pp. 383-407 in Corbett, G.B. and Southern, H.N. (eds) *The Handbook of British Mammals* 2nd edition. The Mammal Society.
Born, E.W., Boertmann, D.M., Heid-Jørgensen, M.P., Dietz, R., Witting, L., Kyhn, L., Fossette, S., Rigét, F.F., Laidre, K., and Ugarte, F. (2009) Abundance of Atlantic Walrus (*Odobenus rosmarus rosmarus*) in East Greenland. *Working paper to the NAMMCO Scientific Committee Working Group Meeting on the Stock Status of Walrus in Greenland and Adjacent Seas*, Copenhagen 23-26.
Grove, J.M. (2004) *Little Ice Ages: Ancient and Modern,* Routledge, London (2 volumes).
Hall, A.J. (2008) Walrus *Odobenus rosmarus* p.550 in Harris, S. and Yalden, D.W. (eds) *Mammals of the British Isles*, 4th edition. The Mammal Society.
Møhl, U. (1974) Subfossil finds of Walrus from Denmark. *Bull. geol. Soc. Denmark* **23**: 303-310.
Møhl, U. (1984) The walrus, *Odobenus rosmarus* (L.), as a "Danish" faunal element during the Weichsel Ice Age. *Bull. geol. Soc. Denmark* 34: 83-85.
Mullard, J. (2022) The wandering Walrus and other Arctic vagrants. *British Wildlife* **33** (4): 235-243.
Reid, C. (1885) *The Geology of Holderness and adjoining parts of Yorkshire and Lincolnshire.* HMSO, London.
Richie, J. (1921) Walrus in British waters. *The Scottish Naturalist* 109 & 110: 5-9.

Sheppard, T. (1899) The contents and origin of the gravels around Hull. *Transactions of the Hull Scientific and Field Naturalist Club* **5** (4): 45-51.
Sheppard, T. (1904) Walrus remains in Holderness. *The Naturalist* 46**:** 317.
Stanska, Z. (2016) Images of Dürer's animals that are better than a trip to the zoo. *DailyArt Magazine*, 21 July 2016.

Things that go tweet in the night: nocturnal monitoring of birds

William Scott[1] & Graham Scott[2]

[1]Bempton, North Yorkshire
[2]Hunmanby, North Yorkshire, gwsljj@gmail.com

Introduction

Bird-watchers, or perhaps more properly bird-listeners, have always relied upon bird calls as a means by which nocturnal species might be identified. In recent years however the nocturnal calls of birds have taken on a new significance with the emergence of 'nocmigging' – the practice of nocturnal migration recording, or more precisely the systematic and purposeful recording of the flight calls of birds as they migrate at night. Prior to the emergence of nocmigging nocturnal migration could only really be detected visually by looking for birds flying across the face of the moon (e.g. Weisshaupt *et al*., 2016), or by radar detection systems (e.g. Bradaric *et al*., 2020).

Nocturnal migration recording takes advantage of the fact that many species of migrating bird call regularly as they fly. These calls are distinctive and species specific, enabling the identification of birds that cannot be seen. Nocturnal migration recording has come to prominence in recent times because suitable recording equipment has become relatively inexpensive; because software that allows the conversion of digital sound files into sonograms for the visualisation of calls has become freely available and somewhat intuitive to use; and because publications like *The Sound Approach* (Constantine, 2006) have made the subject and practice of bird-listening accessible.

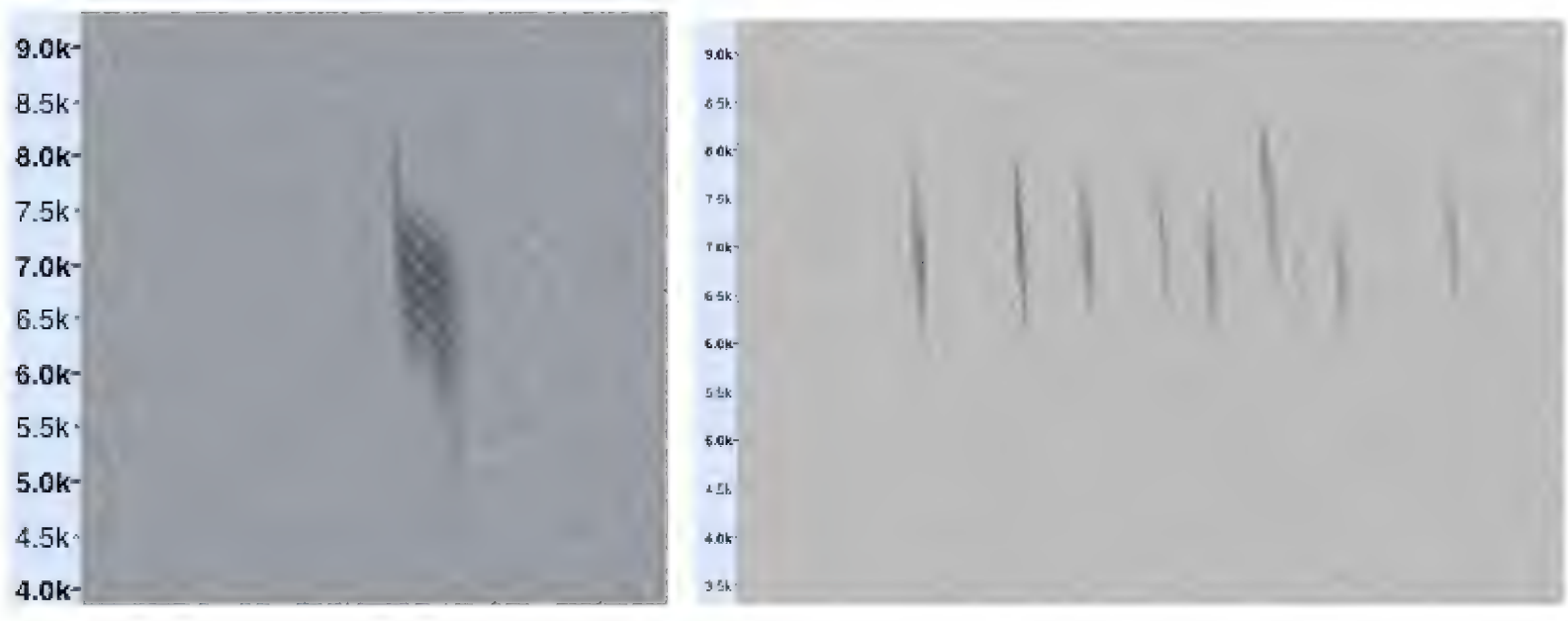
Methods

Since 2018 we have carried out nocturnal recording in an average sized garden in the village of Hunmanby (North Yorkshire), approximately 1 mile inland from the Yorkshire coast and 8 miles south of the town of Scarborough (TA 0959 7704). Our aim is to record birds that are actively migrating overhead. To that end only the flight-calls of birds recorded during the hours of darkness are included in our data. Calls made at dusk and dawn, and the singing of birds during the dawn chorus are excluded, as are the calls of the Herring Gulls *Larus argentatus* that nest on a neighbouring roof. We also excluded the nocturnal species known to be resident in the area (Barn Owl *Tyto alba* and Tawny Owl *Strix aluco*).

Recordings are made on a Tascam DR-05 recorder connected to a HI-SOUND DODOTRONIC microphone that sits at the centre of a 50cm diameter parabolic reflector, which in turn sits inside an up-turned terracotta plant pot in the middle of the garden. The recorder is typically active from shortly before dusk until 7am, but data are only collected during the hours of

darkness. Recording takes place during all months of the year, but only on nights when the conditions are favourable ('noise pollution' means that nights with strong winds and moderate/ heavy rainfall are not conducive to recording).

Recordings are analysed using the open-source software package Audacity® (www.audacityteam.org). The software enables the visualisation of calls as sonograms (see for example figure 1). By listening to the calls and looking at the sonograms it is possible to identify the species involved. As a reference we use the xeno-canto database of bird calls (www.xeno-canto.org), and we are part of an active online community of nocturnal migration recorders who support one another to confirm identifications.



Figures 1a and 1b showing the bird calls visualised by Audacity® software.

Observer experience is used to estimate the numbers of birds calling, and the numbers of calls per bird, but it is acknowledged that for many species this is quite a subjective endeavour. However, for those species known from visual observation to migrate *en-masse* or in flocks the number of calls heard does probably correlate positively with the numbers of individuals involved and so can be used as a measure of migration intensity, albeit a crude one.

Each call that can be identified to species level is recorded as a data point in the online database *www.trektellen.org*, an international repository of migration data. Trektellen is an open access interactive database through which it is possible to explore bird migration data from the UK, a range of European countries and a smaller number of sites elsewhere in the world. Data that we have submitted can be found by searching the site for 'Hunmanby' and selecting the site labelled 'Hunmanby nocturnal flight calls (N Yorks, England)'.

During the period 2018-2022 we have recorded 115 species of birds, including local rarities such as Mandarin Duck *Aix galericulata* (2020), Black-crowned Night Heron *Nycticorax nycticorax* (2022) and Lapland Bunting *Calcarius lapponicus* (2020). Since 2018 we have undertaken more than 4800 hours of recording and submitted information about more than 17700 calls to Trektellen. Here we present data from one calendar year (2021) to illustrate both the range of species of birds encountered, and the potential of nocturnal call recording for the elucidation of broad patterns of movements of birds during an annual cycle. The numbers of nights of recording that occurred during each month of 2021 are presented in Table 1, p126.

Results and discussion

The nocturnal calls of sixty-nine species of bird were recorded during the twelve months of 2021. These species are listed in Table 1, which also shows which months of the year each species was recorded in, and the number of nights of recording that took place during each month. While the range of species recorded is remarkable, the presence (or absence) of a species in a month tells us relatively little about the migration of birds over the recording area.

Table 1. The species recorded. Crosses indicate the month of the year (months indicated by initial letter in the first row of the table) in which a species was recorded. Superscript figures following each month's initial letter indicate the number of nights of recording that took place during that month.

Species	J[17]	F[22]	M[29]	A[29]	M[24]	J[19]	J[14]	A[8]	S[14]	O[14]	N[14]	D[7]
Canada Goose *Branta canadensis*						X		X	X	X	X	X
Barnacle Goose *Branta leucopsis*			X									
Greylag Goose *Anser anser*	X	X	X	X	X				X	X		X
Pink-footed Goose *Anser brachyrhynchus*	X	X	X	X					X	X	X	X
Whooper Swan *Cygnus cygnus*			X							X	X	X
Shelduck *Tadorna tadorna*			X									
Gadwall *Anas strepera*				X	X	X						X
Eurasian Wigeon *Anas penelope*	X	X	X	X	X					X		X
Mallard *Anas platyrhyncos*	X	X	X	X	X	X	X	X	X	X	X	X
Eurasian Teal *Anas crecca*	X	X	X	X								
Tufted Duck *Anthya fuligula*					X	X						
Common Scoter *Melanitta nigra*			X	X		X			X	X	X	
Goldeneye *Bucephala clangula*		X										
European Quail *Coturnix coturnix*					X	X						
Little Grebe *Tachybaptus ruficollis*		X	X	X	X	X	X	X				
Eurasian Bittern *Botaurus stellaris*												X
Grey Heron *Ardea cinerea*	X		X					X				X
Water Rail *Rallus aquaticus*		X	X	X	X	X	X					
Moorhen *Gallinula chloropus*	X	X	X	X	X	X	X	X	X	X	X	X
Eurasian Coot *Fulica atra*	X	X	X	X	X	X				X		
Stone Curlew *Burhinus oedicnemus*					X							
Eurasian Oystercatcher *Haematopus haematopus*		X	X	X	X	X	X	X	X			
Northern Lapwing *Vanellus vanellus*		X	X	X			X		X	X	X	X
European Golden Plover *Pluvialis apricaria*		X	X	X					X	X	X	
Grey Plover *Pluvialis squatarola*			X									
Ringed Plover *Charadrius hiaticula*					X		X	X				
Little Ringed Plover *Charadrius dubius*					X	X						

Eurasian Whimbrel *Numenius phaeopus*				X	X							
Eurasian Curlew *Numenius arquata*		X	X	X		X	X	X	X			
Black-tailed Godwit *Limosa limosa*								X				
Turnstone *Arenia interpres*							X		X		X	
Knot *Calidris canutus*		X			X	X	X					X
Sanderling *Calidris alba*				X	X			X				
Dunlin *Calidris alpina*		X	X		X	X	X	X	X	X	X	X
Snipe *Gallinago gallinago*	X	X	X	X					X	X	X	X
Common Sandpiper *Actitis hypoleucos*				X	X		X		X			
Green Sandpiper *Tringa ochropus*							X					
Redshank *Tringa totanus*				X	X	X	X		X			
Wood Sandpiper *Tringa glareola*							X					
Greenshank *Tringa nebularia*								X				
Black-headed Gull *Chroicocephalus ridibundus*		X	X	X	X				X	X		
Common Gull *Larus canus*		X	X	X						X		X
Sandwich Tern *Sterna scandvicensis*							X					
Arctic Tern *Sterna paradisaea*								X	X			
Carrion Crow *Corvus corone*	X	X	X	X	X	X	X		X	X	X	X
Eurasian Blue Tit *Cyanistes caeruleus*										X		
Eurasian Skylark *Alauda arvensis*		X	X						X		X	
Swallow *Hirundo rustica*					X	X						
House Martin *Delichon urbica*							X					
Eurasian Reed Warbler *Acrocephalus scirpaceus*						X						
Eurasian Blackcap *Sylvia atricapilla*				X								
Goldcrest *Regulus regulus*		X								X		
European Starling *Sturnus vulgaris*			X			X					X	
Ring Ouzel *Turdus torquatus*										X		
Blackbird *Turdus merula*	X	X	X	X						X	X	X
Fieldfare *Turdus pilaris*		X	X								X	X
Redwing *Turdus iliacus*	X	X	X	X						X	X	X
Song Thrush *Turdus philomelos*	X	X	X	X	X	X		X	X	X	X	X
Spotted Flycatcher *Muscicapa striata*					X							
European Robin *Erithacus rubecula*	X	X	X	X	X			X	X	X	X	
Black Redstart *Phoenicurus ochruros*		X										
Dunnock *Prunella modularis*			X									
Yellow Wagtail *Motacilla flava*				X				X				

Meadow Pipit *Anthus pratensis*		X	X	X								
Tree Pipit *Anthus trivialis*					X							
Chaffinch *Fringilla coelebs*												X
Goldfinch *Carduelis carduelis*			X									
Snow Bunting *Plectophenax nivalis*											X	
Reed Bunting *Emberiza schoeniclus*										X		X

The data presented in table 1 indicate that some of the monthly occurrences do correlate with known migration patterns. In some cases we can be confident that the recordings relate to single migrating individuals such as the Stone Curlew flying over on the night of the 28th of May and the single Tree Pipit and three Spotted Flycatchers recorded on the 29th of May when the weather conditions, a light southerly wind, were perfect for the movement of these species.

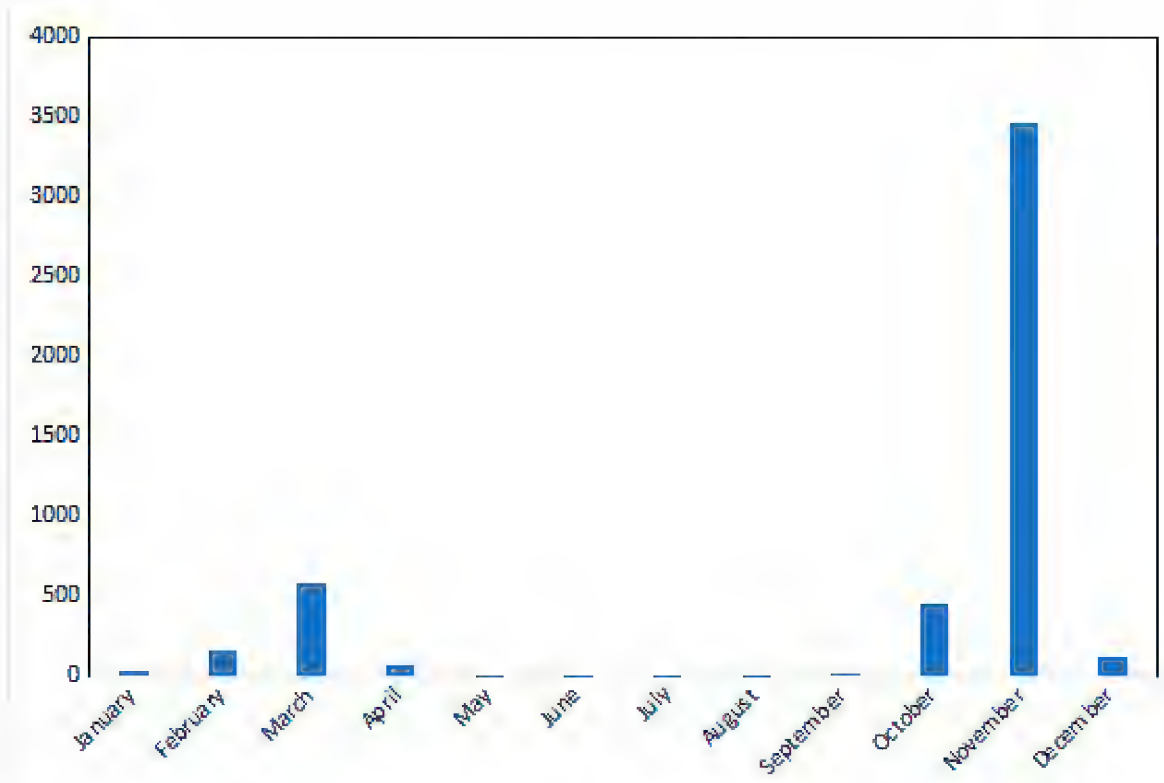


Figure 2. Numbers of Redwing recorded each month during 2021

The presence/absence data in the table also confirm that winter migrants like the Redwing arrive *en masse* in the autumn, winter in the United Kingdom, and then leave again in the spring. Closer examination of the data sitting underneath the monthly occurrence however reveals that the intensity of autumn migration (expressed as numbers of calls recorded) is highest in November when birds enter the UK and March when they leave (figure 2). Figure 2 also indicates that nocturnally migrating Redwing continue to pass overhead throughout the winter months (December to February), perhaps as cold weather movements from the near continent or within the United Kingdom.

This bimodal autumn/spring peak of intensity in movements is also evident in species that are recorded throughout the year and might otherwise be considered to simply be resident birds. As an example, Song Thrush are recorded in most months (Table 1) but do also demonstrate late winter/early spring and autumn peaks (presumably migration into/out of the UK as winter visitors) (Figure 3). However, they also show peaks of movement in spring and late summer/

early autumn which are probably the movements of birds breeding in the UK and on passage migration or post-juvenile dispersal.

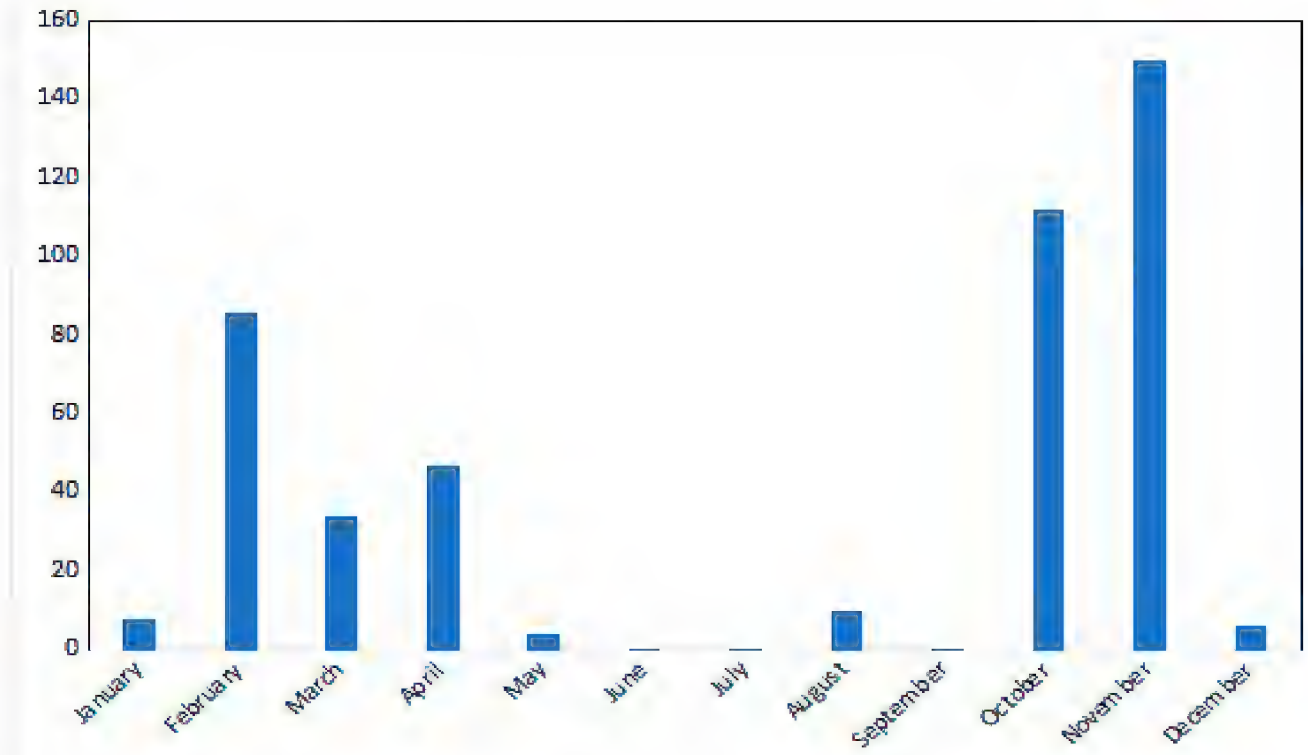


Figure 3. Numbers of Song Thrush recorded each month during 2021

In contrast the bimodal distribution of data pertaining to Common Sandpiper reveals a different kind of migratory movement. These birds pass overhead in spring and late summer (Figure 4, p130). This pattern of movement is indicative of passage migration as birds move between breeding and wintering grounds.

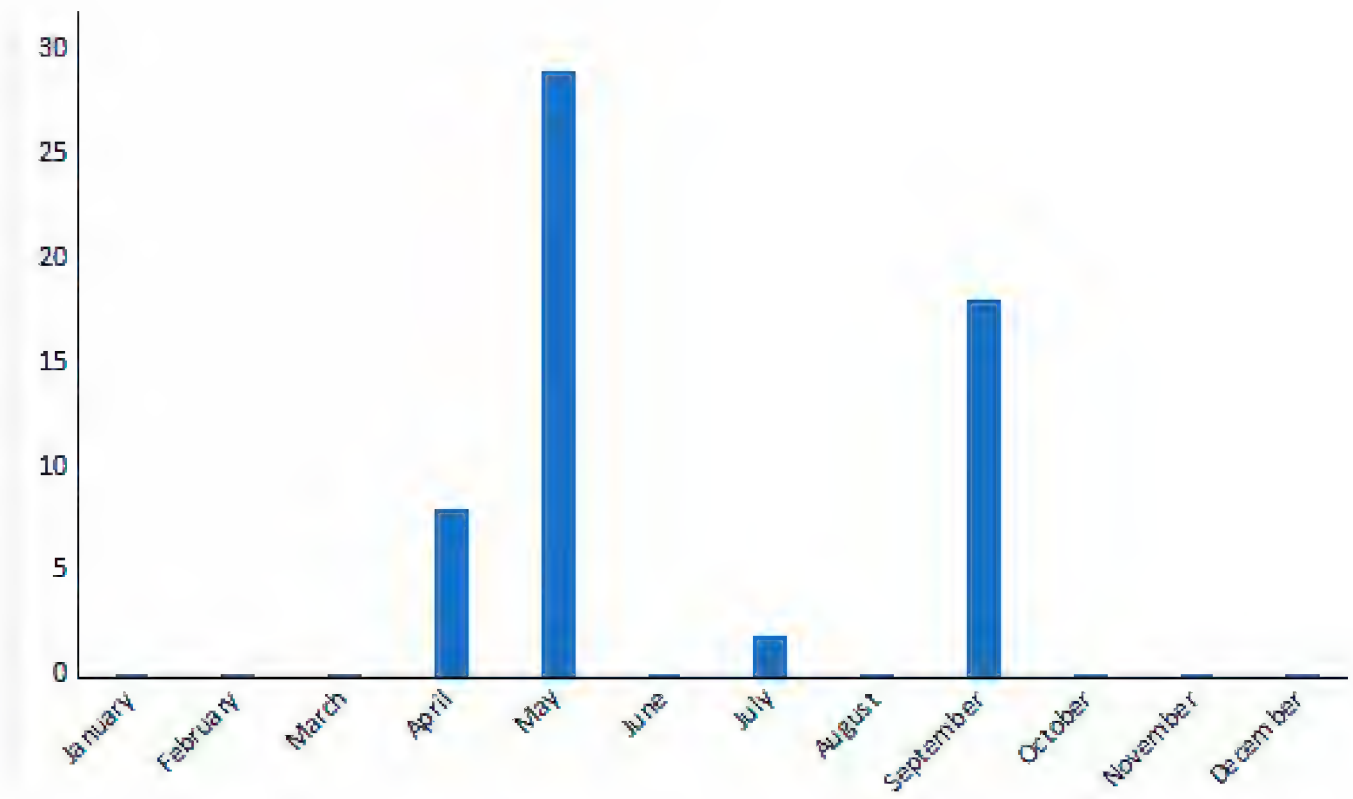


Figure 4. Numbers of Common Sandpiper recorded each month during 2021

Conclusion

At one level nocmigging, the nocturnal recording of migrating birds, is a rewarding pastime and one that offers naturalists an insight into a less commonly observed phenomenon. At another level however it has the potential to further our understanding of bird migration by complementing the work of the vis-miggers, who record day-time migration by recording the birds that they see, and ringers who determine migration routes and destinations by trapping birds and attaching rings/tags or transmitters to them.

Nocturnal recordings can be used to describe seasonal patterns of movement and to infer the relative scales of those movements, but as things stand currently, we cannot yet confirm numbers of individual birds involved. As an additional methodology for the surveying of birds it provides a new avenue of data collection, particularly in that it enables observers to record the presence of species that pass through an area at night that would otherwise be undetected. It should however be remembered that a bird that does not call will not be recorded and so nocmigging cannot confirm species absence.

Acknowledgements

We would like to thank Mark Pearson and Dan Lombard, both of whom have helped us to confirm the identification of species from calls with which we were unfamiliar. This paper started life as a talk given by Will Scott as part of the 2022 Flamborough Bird Observatory Migration Week.

References

Bradaric, M., Bouten, W., Fijn, R.C., Krijgsveld, K.L. & Shamoun-Baranes, J. (2020) Winds at departure shape seasonal patterns of nocturnal bird migration over the North Sea. *Journal of Avian Biology*, 51. Available at https://onlinelibrary.wiley.com/doi/10.1111jav.02562 last accessed on 20/12/2022.

Constantine, M. & The Sound Approach (2006) *The Sound Approach to Birding: A guide to understanding bird sound*. The Sound Approach, Poole, UK. 192 pp.

Weisshaupt, N., Maruri, M. & Arizaga, J. (2016) Preliminary assessment of nocturnal bird migration at the Bay of Biscay as observed by moon-watching. *Munibe, Ciencias Naturales*.,64, 155-159, available at https://pdfs.semanticscholar.org/18bf/6d16f1a91a924bf6aa65bc272f0ff6891fe5.pdf last accessed on 20/12/2022.

Yorkshire Naturalists' Union AGM Day

21 October 2023

Morning (at Askham Bog):
10:30am. Alastair Fitter will lead a walk around **Askham Bog YWT Reserve**. Meet at the reserve entrance (SE574479) where parking is available. Alternatively, the reserve is about a 10 minute walk from the Askham Bar Park & Ride which runs to York Station (every 12-15 minutes; journey time about 18 minutes), within walking distance of the Priory Street Centre. Please come suitably shod and clothed for whatever the terrain and weather throw at us!

Lunch Bring your own packed lunch or there are various food outlets in the vicinity of the Priory Street Centre.

Afternoon (at Priory Street Centre):
1:15pm. **Group photo** followed by welcome from the host organisation, the **Yorkshire Wildlife Trust,** including a brief discussion about future collaboration between the YNU & YWT.
2:00pm. **AGM** followed by address from the Retiring President, **Prof. Alastair Fitter**, on ***The State of Nature in Yorkshire***.

The Priory Street Centre is about a 10 minute walk from York Station. Parking is available in the nearby Nunnery Lane carpark (there is very limited parking at the Centre).

Booking will be via an Eventbrite link to be circulated during September. Please indicate whether you wish at attend the Askham Bog visit as well as the AGM or to attend the latter via Zoom. We hope as many of you as possible will be able to attend in person.

For those of you without internet access please notify the Membership Secretary (c/o NEYEDC, Unit 7, Hassacarr Close, Dunnington, York, YO19 5SN; Tel. 01904 641631) of your intention to attend the AGM and, if desired, the Askham Bog tour, by 30 September.

The Story of Old Moor - Part 2

Eric Bennett
Email: eric.bats@uwclub.net

The early stages

Having covered the background to the Old Moor project in Part 1 (Bennett, 2023), we will now look at the early stages where land and funding issues, surveys and partnerships were dealt with, and visiting the many ups and downs endured along the way.

Old Moor with Wath Ings was quite a different place at the outset, before any major work had been carried out. Land ownership was divided between British Coal and the then National Rivers Authority which operated the site for flood storage purposes. The land comprised a mix of arable and pasture farmland, a large area of 'coal waste' from the former coal stocking operations and the open water subsidence flash of Wath Ings. Wath Ings was leased to the Yorkshire Wildlife Trust and there was a seasonal grazing licence over the flood banks to prevent scrub encroachment. The farm buildings were still occupied by the tenant farmer but in very poor condition with some in a state of partial collapse. Aside from the farmhouse group and the large barns, there were several structures, single storey animal sheds and lean-to's, which were in the worst condition.

Funding arrangements

The Countryside Unit's involvement began around 1990. This early period was characterised by occasional flurries of excitement and very long periods of frustrating inactivity. Our main focus was on refining the design and future management of the proposed reserve, but everything hinged on securing the huge amount of funding needed to realise the project. The tempo eventually picked up with preliminary allocations from funding bodies. The bulk of the groundwork would be funded by Derelict Land Grant, which at that time was at 100%, from The Department of the Environment. The facility development needed above that amounted to a further £950K from the UK government's City Challenge Programme matched with the same amount from the European Regional Development Fund. A small amount would be provided from our Countryside budget matched by grant aid from the Countryside Commission.

Grant allocations at this level required a correspondingly high level of justification in the form of Consultants' Reports. Consulting Engineers, Ove Arup, produced a colossal document covering the Engineering aspects and Grant Leisure Group produced a more modest document on Visitor Attraction issues. The Wildlife Advisory Service of The Wildfowl and Wetland Trust (WWT) produced an even slimmer (but to us more interesting) document on the ecological aspects, design, and management of the site.

The major proposal emerging from the initial investigations by the consultants was for Old Moor to be managed by The Wildfowl and Wetlands Trust alongside its other sites across the country and their flagship reserve at Slimbridge in Gloucestershire set up by Sir Peter Scott. During 1993, as part of the engineering study, low flow level measurements taken in the River Dearne following a drought gave a level of 18.3m AOD for the minimum level required to permit a gravity water supply to the site. To protect the farm buildings and the themed area

from flooding, these areas would need to be bunded to 21.3m AOD and the Green Lane area to 19.7m AOD. In June 1993, the Dearne Towns Link Road (now Dearne Valley Parkway A6195) was completed, and the future boundaries of Old Moor fixed.

Initial draft scheme

In April 1994 a draft scheme was produced by the WWT which saw the main Visitor Centre located at the southern corner of the Main Lake where large windows would provide the initial 'wow' factor for visitors from panoramic views over the lake. This is approximately the position of the Family Hide as it is today. A smaller satellite centre was to be located in the corner of the themed area overlooking the reedbeds at approximately the position of the Reedbed hide today. The farm buildings would be 'back of house' and possibly also used as a conservation skills training centre.

This air photo taken in Summer 1993 shortly after the opening of the Dearne Towns Link Road clearly shows Wath Ings with the River Dearne to its right and Broomhill Flash and Wombwell Ings in the upper part of the picture. The large grey area to the left is the cleared railway marshalling yards for Wath Manvers Colliery.

The Themed Area would contain a wildfowl collection concentrating on certain species with an international conservation message or a small collection of captive European wildfowl to allow interaction and appreciation of birds which could only be observed at a distance from the hides. The remainder of the scheme is recognisable in the site as we see it today with Reedbeds, Wader Scrape, Flood Meadows, and Main Lake etc. Wath Ings itself was to be retained largely unchanged. This all amounted to an extremely impressive and exciting scheme having a national significance in terms of the site itself and its links with the Wildfowl and Wetlands Trust, a nationally and internationally recognised organisation.

The ups and downs

1994 was a very difficult year for us with three 'disasters' any of which could have scuppered the whole scheme. Late in 1993 or in early 1994, we had the devastating news that our City Challenge budget had been reduced by half to £470K with consequently the same reduction in the EC match funding, reducing the overall budget by almost a million pounds. The original scheme would now be impossible, and the scheme would have to be adjusted. Attention shifted to using the farm buildings rather than creating a new centre and interpretation features would have to be reduced (see online appendix at https://ynu.org.uk/about-the-ynu/publications/download-page/category/9-appendices for the plan of farm buildings). We would lose the 'wow' factor of the original scheme but there was no alternative.

I still have the minutes of a meeting held on 10th February 1994. It was an advisory group brought together to ensure that all the conservation interests were satisfied. Representatives from the Yorkshire Wildlife Trust (YWT), RSPB, Wildfowl & Wetlands Trust, English Nature and The National Rivers Authority attended with Malcolm Parker and me from the Council.

Malcolm gave an update on progress and important stages reached:-

- Planning Permission had been granted.
- Initial DOE approval has been given for Derelict Land Grant.
- Final approval from DOE to the project appraisal expected soon for City Challenge funding.
- A further application was currently being made for EU funding under the 'Life' programme.
- Work expected to start on site in autumn 1994.
- Final opening date for the scheme was projected to be Easter 1997.
- Considerations on the building design were taking place.

After much discussion, the following aims of management were agreed:-

Maximise habitat for breeding, wintering and passage birds.

Create a wide range of habitats, plant and animal communities.

Facilitate observation and research and a complete visitor experience.

Facilitate environmental education for all age groups.

General prescriptions for managing different habitats were agreed.

Contribute to the national aim to achieve 100 pairs of Bittern by 2020 which at that time (1994) were estimated at 17 breeding males.

The importance of considering all the nature conservation sites in the vicinity as a single management unit was paramount. This was the first recognition of what would much later become Broomhill Ings SSSI.

Barnsley Metropolitan Borough Council (BMBC) would shortly be contacting English Nature for declaration of all the sites as a single LNR (Local Nature Reserve).

Circular footpath concept discarded in favour of two arms with no public access around the riverbanks.

Interpretation needs to be to a high standard.

Relationship with YWT to be dealt with separately between BMBC and YWT.

By April 1994 a full topographical survey of the whole site had been completed. Borehole

surveys had also been completed to determine ground and ground water conditions. With the deeper excavations, particularly the Main Lake, cutting through shale bands, they would need to be sealed as excavations progressed in order to avoid uncontrolled movement of water to and from the River Dearne. After all this positive activity we were hit with a second potential disaster in the shape of plans for a new airport near Goldthorpe. This was not intended to be a major airport providing holiday flights etc but rather a local feeder to larger regional airports, probably more attractive to business activity than leisure. Thankfully after a few months the scheme had died and was not heard of again. The relief was only short lived however because we were soon to experience our third major setback. The Wildfowl and Wetlands Trust decided that they could no longer be involved with the scheme. They cited as the main reason the conflicting timescales of Old Moor with their new site at Barn Elms in London.

I can't overstate our level of disappointment, close to despair, at the time. We really were on our own now, with a massive scheme to start and no partners in the frame for looking after the site long term. We had never anticipated running the site directly, always recognising that it would be more successful in specialist hands.

Outline Brief

The brief came from the work carried out by the WWF consultancy team. There were two fundamental elements that needed to be brought together to achieve a successful outcome. Firstly, satisfying the critical flood defence requirements of the National Rivers Authority and secondly, the development of a functioning hydrological system for the site.

Flood Defence

The site is enclosed in earth flood banks intended to accommodate surplus water during flood events, in order to protect vulnerable residential and commercial areas along the valley.

An inlet spillway is located in the River Dearne banks towards the eastern end of Wath Ings. Flood water would be retained in the site until levels in the river subside and then allowed to gradually return through flap valves which open automatically as river levels drop below the flood level within the site.

Normal flows from Wath Ings discharge to Knoll Beck near to the junction with the River Dearne. This outlet is protected by a flap valve which automatically closes when water levels in Knoll Beck rise above the flap. Closure of the flap means that water levels would rise within the site, triggering Environment Agency pumps located nearby. The available flood capacity is calculated as being above ground level and normal water levels. In working out the design for the site this above ground figure was a factor that had to be accommodated with no possibility of reduction.

Hydrological factors

The water supply and the ability to manipulate the flow of water through the system, are key to the future successful management of the wetland habitats.

A low flow level in the River Dearne, recorded following a drought period in early November 1993 gave a level of 18.9m AOD, suggesting a gravity fed system was feasible. The Reservoir, at a higher level and pump fed would give the ability to maintain the system if in abnormally low river conditions the gravity system did not work.

The details of the design brief in relation to each site feature will be fully described in the next article in the series.

Reference

Bennett, E. (2023) The Story of Old Moor - Part 1. The Naturalist 148: 8-12.

Update on spider recording in Watsonian Yorkshire (2020 - 2022)

Richard Wilson 29 Primley Park Lane, Alwoodley, Leeds, LS17 7JE.
Email: riwspider@yahoo.co.uk

Introduction

The following article represents the sixth in an ongoing series (Wilson, 2011a, 2011b, 2014, 2017, 2020) providing an update on spider recording in Watsonian Yorkshire (vice-counties 61 to 65).

Yorkshire Naturalists' Union and British Arachnological Society members may be aware that a previous spider recorder, Clifford Smith, privately published an Atlas of Yorkshire Spiders, with all records up to the end of 1981 being meticulously recorded at the hectad level on hand-drawn maps (Smith, 1982). The fortieth anniversary of its publication passed in early March 2022 and I am pleased to report that an update to this Atlas is currently in preparation covering all records up to the end of 2021. The exact format is yet to be decided, but it is hoped that the final version will be completed in the near future. This version will include, for the first

time, a detailed review of the county's harvestmen, as well as chapters describing the spider and harvestmen faunas of Yorkshire's landscapes and environments and short biographies on arachnologists and naturalists who have studied its fauna.

Spiders (2020 – 2022) Overview

In the last three years, a total of 4,381 records of 288 species including the two varieties of *Araneus marmoreus* (var. *marmoreus* and var. *pyramidatus*) and the aggregate of *Micaria pulicaria* have been submitted to the Scheme by 40 recorders including myself. A further two non-native species, *Hasarius adansoni* (Salticidae) (1 record from VC 62) and *Uloborus plumipes* (Uloboridae) (6 records from all VCs except VC 65) have been recorded from artificial biomes.

Especial thanks are offered to Geoff Oxford (649 records), Jim Pewtress (513), James McGill (371) Andrew Grayson (341), Tim Jonas (212) and Richard Gallon (150) who have made substantial contributions (> 100 records) in addition to my own efforts (1,995 records). Consequently, 89 hectads have been visited in this three-year period (Figure 1), approximating to slightly half of the county, and representing 267 tetrads (Figure 2, p138). There is some clustering such as between York and Kirkbymoorside, no doubt reflecting Geoff Oxford's and Jim Pewtress' sterling efforts. An additional 79 tetrads were visited for the first time in the three years covered by this review (Figure 3, p138) but no new hectads.

Areas that continue to lack much attention are the North Pennines Area of Outstanding Natural Beauty (AONB), Nidderdale AONB and the southern Yorkshire Dales National Park (NP), the Vale of Mowbray, Teesdale, the northern half of the North York Moors NP and much of Holderness around Driffield, as illustrated on the heat map in Figure 4 (p139), though tetrad coverage is increasingly comprehensive.

Figure 1

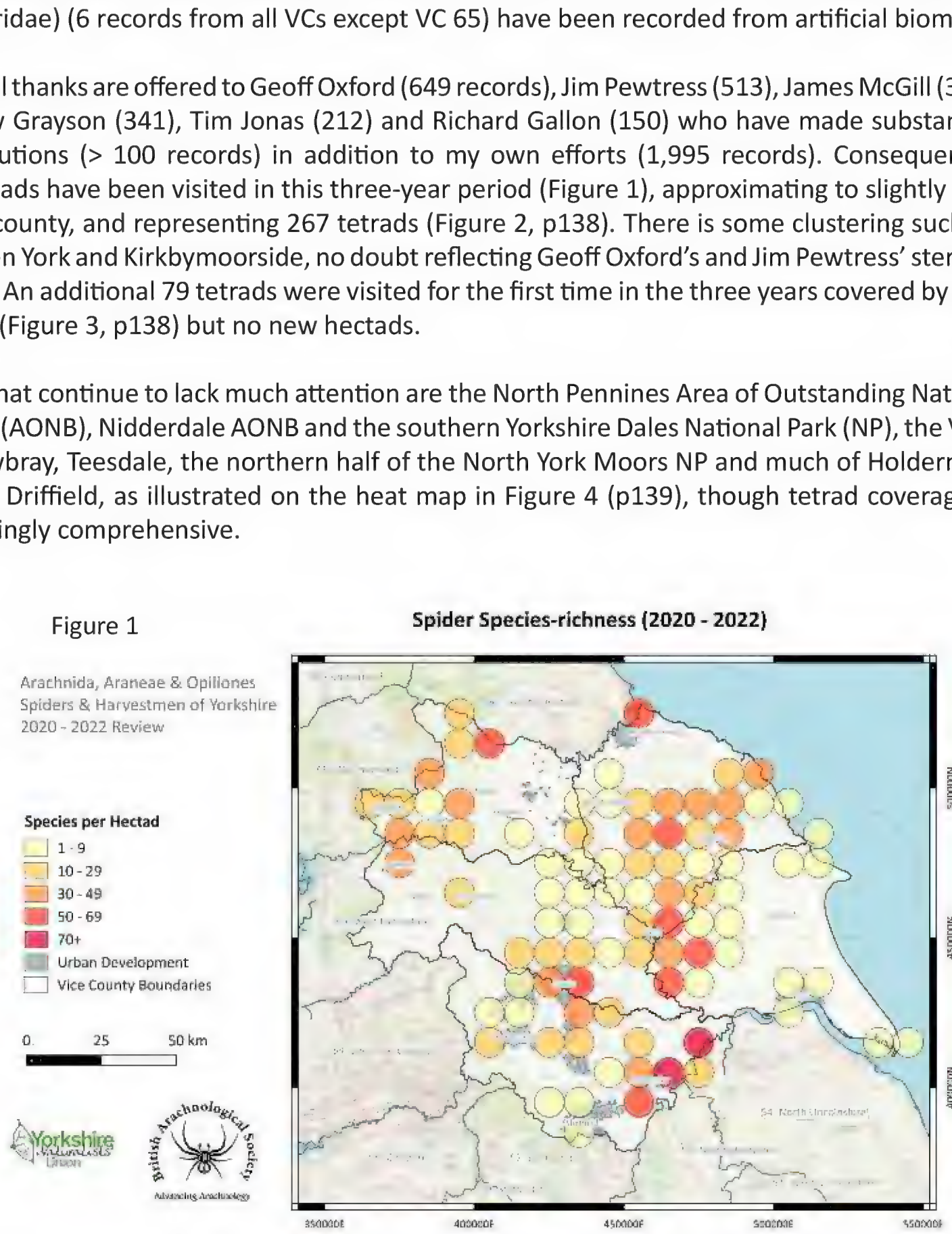


Figure 2

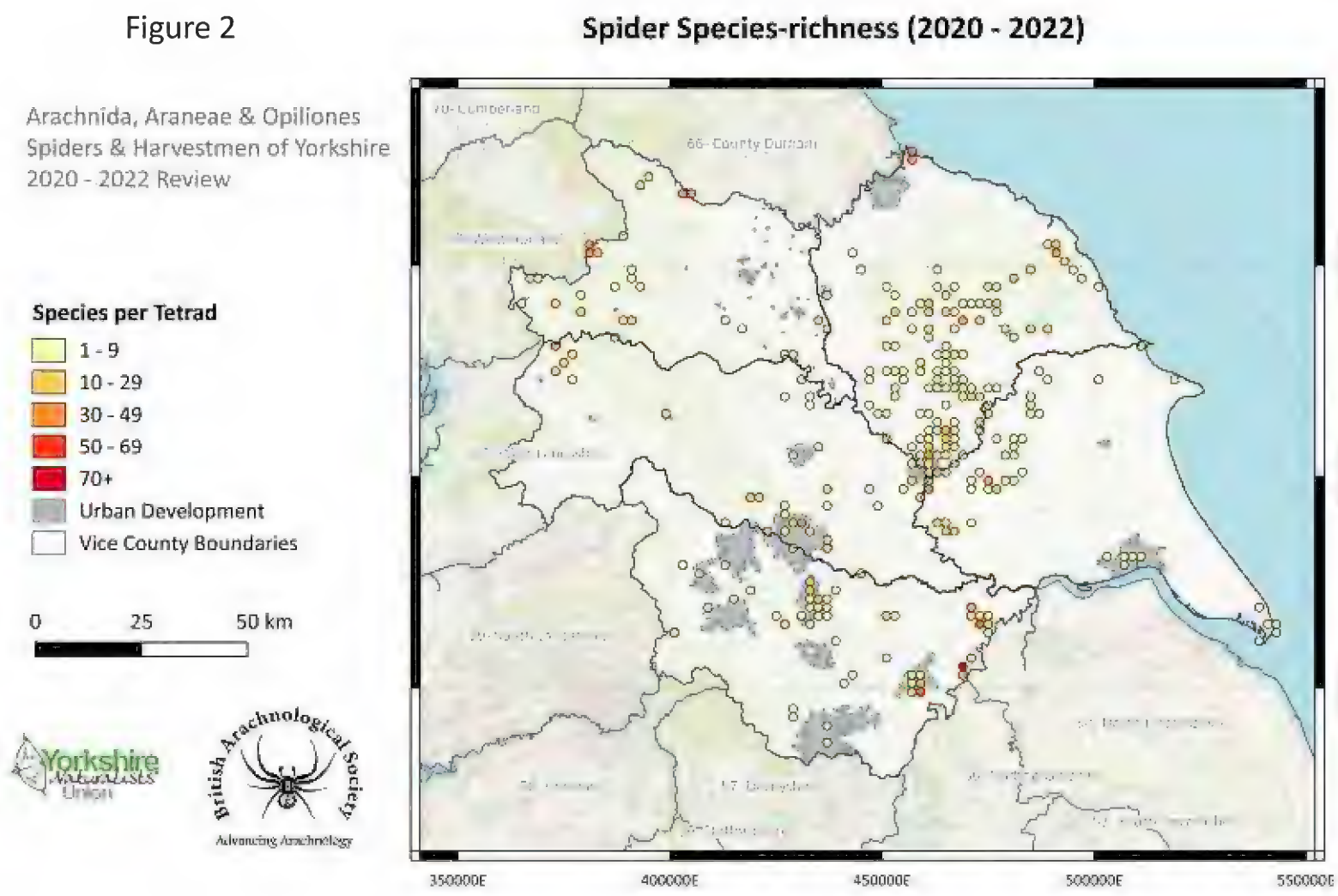


Figure 3.

Figure 3.

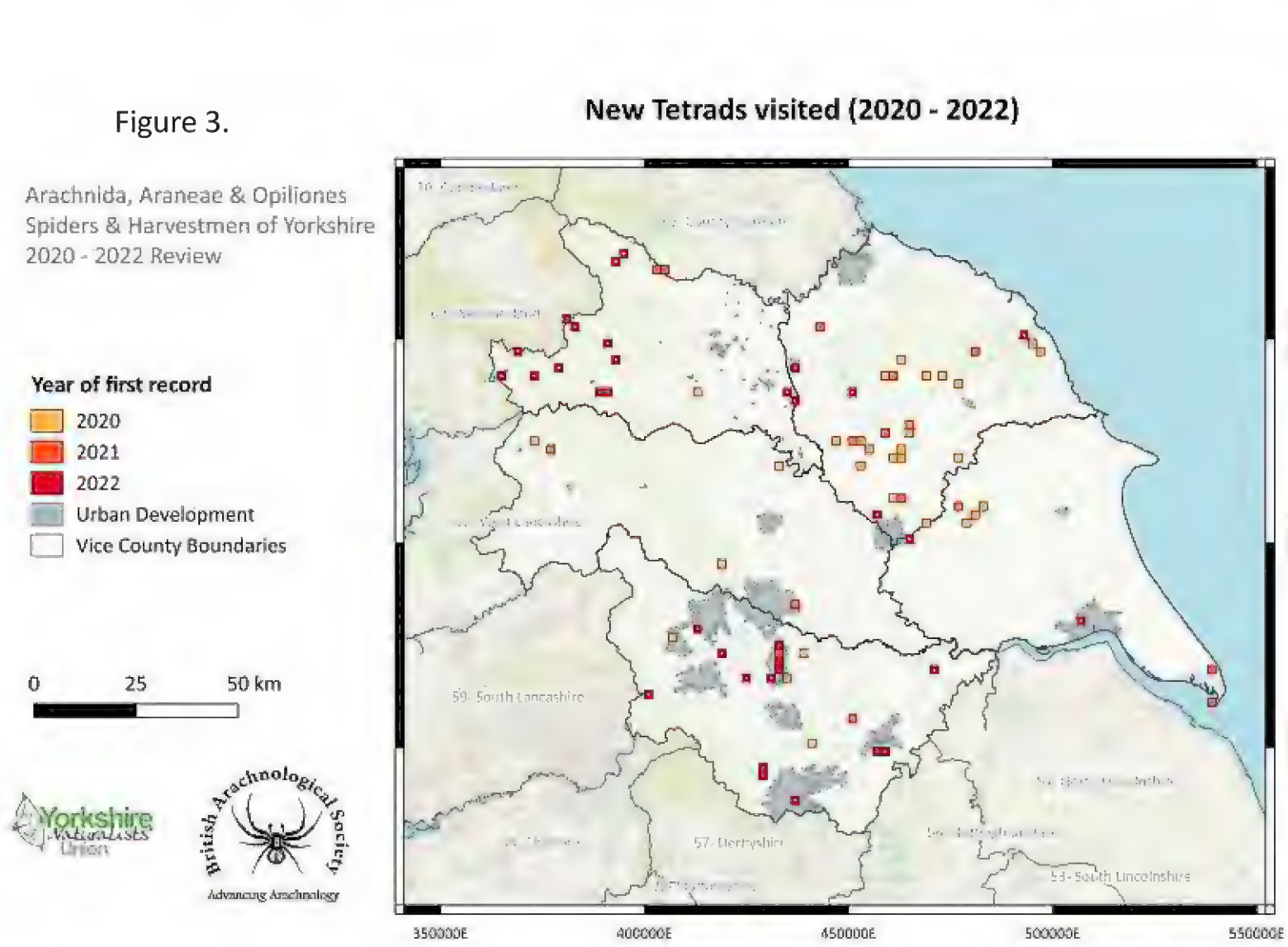


Figure 4.

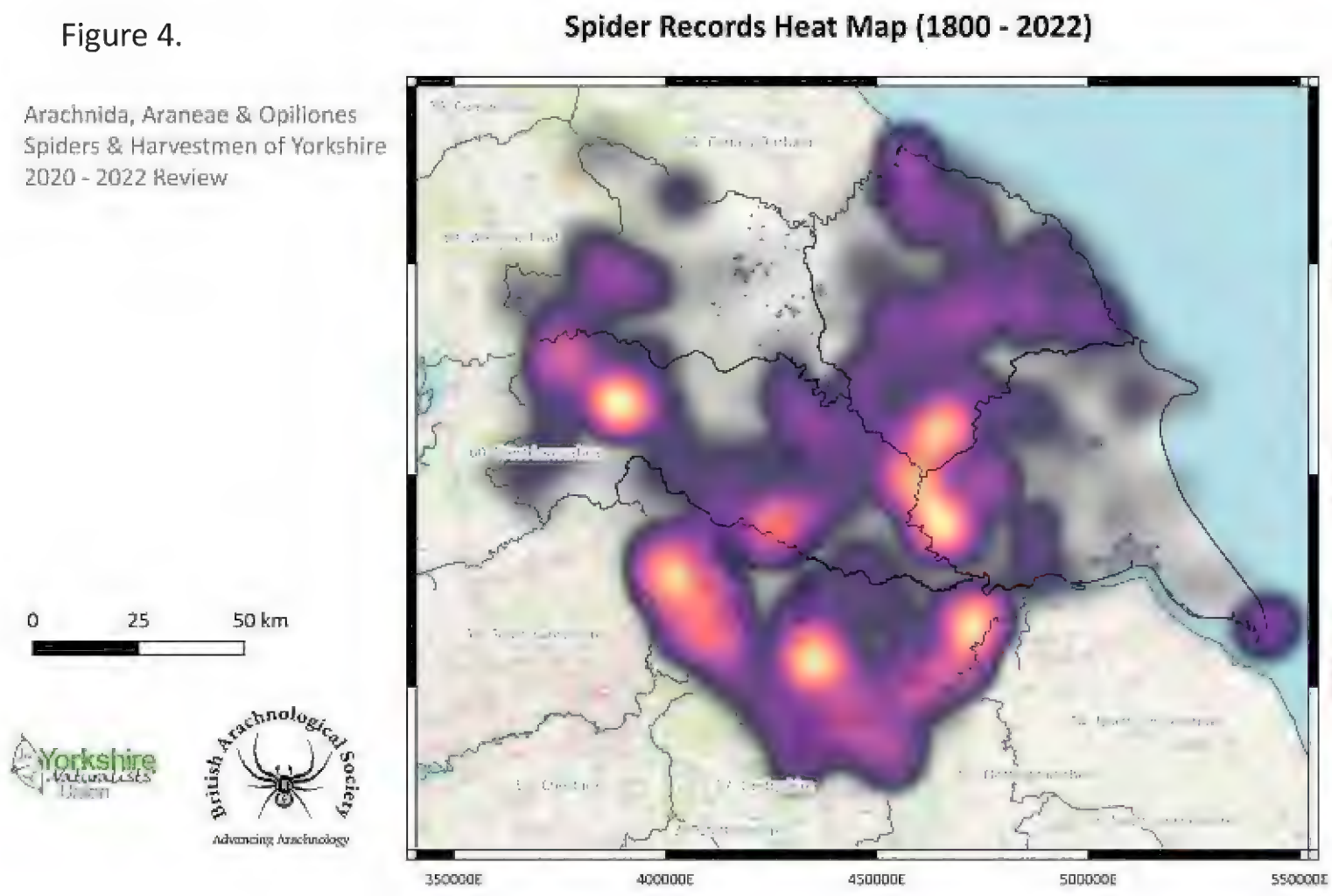
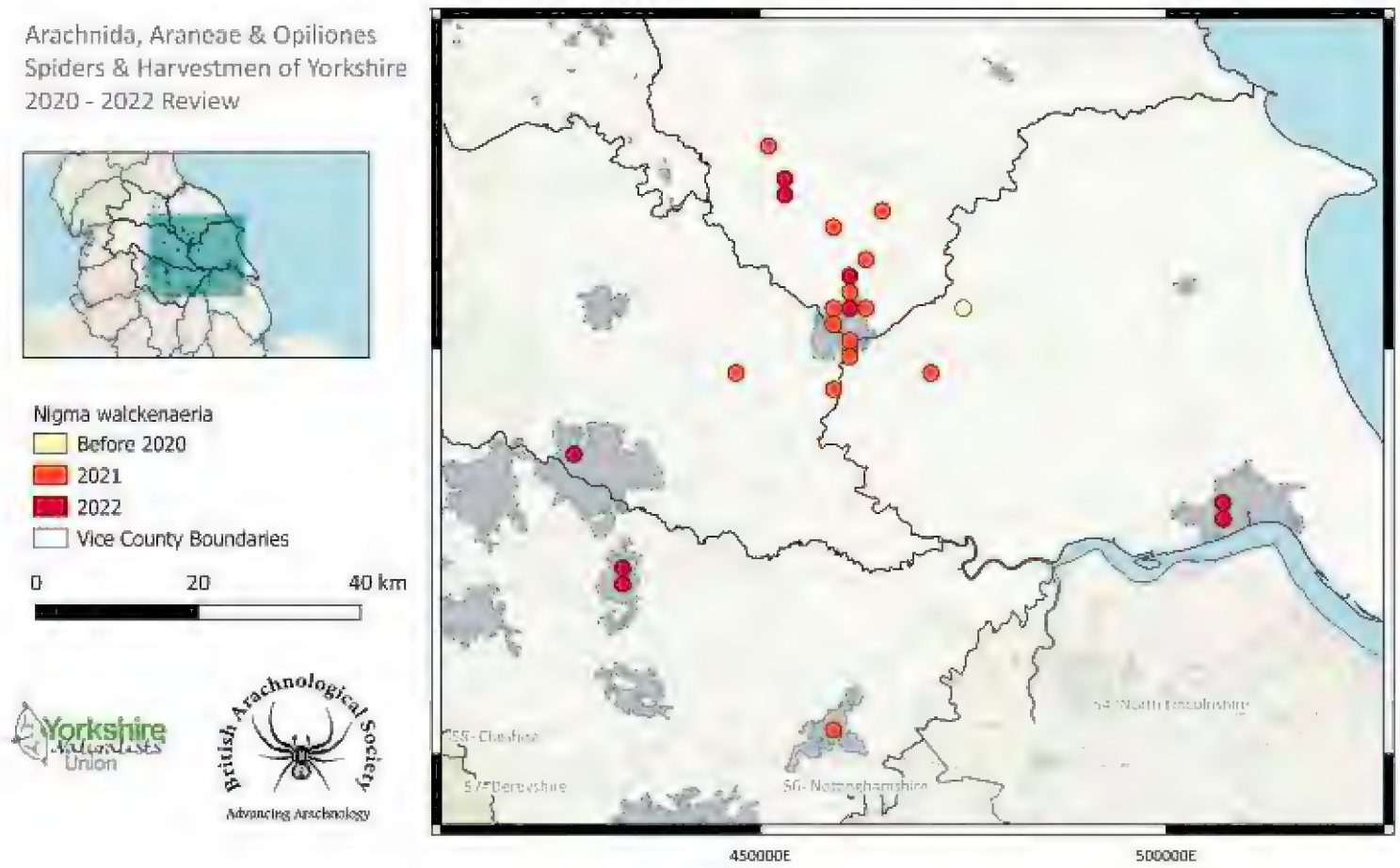


Figure 5. Distribution of *Nigma walckenaeri* in Yorkshire (see p144).



New county and vice-county records

The last three years has added ten new spiders, including one new family, for the county, which are described in detail below with information taken from the Spider Recording Scheme (SRS) (2023) website for each taxon. A further 19 species that are new to one or more vice-counties are simply listed in Table 1, (p144) with the year when each was first recorded. These species have been previously recorded in one or more Yorkshire vice-counties. For some species such as the money-spider *Pocadicnemis juncea* and the orb-web spider *Araneus quadratus,* their addition to the VC 65 list reflects the relative lack of recording in Yorkshire's north-west.

Ero aphana (Mimetidae) VC 62, VC 63

Until fairly recently, this pirate spider has been associated with the southern English heaths in Dorset, Hampshire and Surrey. However, it has begun to exploit new habitats, for reasons unknown. It has spread rapidly and is now frequent in south-east England and scattered as far north as the English Midlands. Its arrival in Yorkshire was only a matter of time and was first recorded in York (VC 62) in May 2020 by Sam Buckton, with further sightings from Wakefield (VC 63) in March and April 2022 by Tim Jonas and Strensall Churchyard in July 2022 by Geoff Oxford.

Cryptachaea blattea (Theridiidae) VC 64, VC 62, VC 63

C. blattea is a non-native synanthropic species originating from New Zealand; all records are associated with human infrastructure. The first Yorkshire records were from my Leeds back garden in spring 2020 and it has since been recorded on several occasions in 2021 and 2022 by Geoff Oxford (York) and Tim Jonas (Wakefield).

Theridion pinastri (Theridiidae) Nationally Scarce VC 63

This comb-footed spider with a distinctive abdominal pattern and male palp was collected by me during survey work on behalf of the Thorne and Hatfield Moors Conservation Forum, whilst investigating the ecology of *Sibianor larae*. In sweeping Heather (*Calluna vulgaris*) and shrubby birch (*Betula* sp.), a male *Theridion pinastri* was taken at Hatfield Moors SSSI in July 2022 from its classic habitat, woodland edge/ open habitat interface. This spider is almost restricted to the Greater London, Surrey and Kent area of south-east England, with a few scattered records north to Cambridgeshire. That it has now been recorded from the Humberhead Peatlands NNR is a remarkable extension in its known range.

Erigone welchi (Linyphiidae) Endangered Nationally Rare VC 62

The money-spider *Erigone welchi* is a species associated with water-logged *Sphagnum* pools and hitherto known from just nine hectads in Britain, of which only two have registered records in recent decades. This apparent decline when assessed against the International Union for the Conservation of Nature (IUCN) threat criteria owing to Area of Occupancy being less than 500 km^2 and a continued decline being observed (IUCN, 2022) explains its Endangered classification as well as its Nationally Rare status under British rarity definitions. The three most recent British records pre-dating the Yorkshire specimen are from the Upper Elan Valley in central Wales (VC 47: Montgomeryshire) in July 2008; and the Migneint area of Eryri (Snowdonia) NP in north Wales (VC 49: Caernarvonshire) in June 2003 and again in June 2019.

James McGill's discovery of two females from vacuum sampling wet acid *Sphagnum* bog on Fylingdales Moor (VC 62) within the North York Moors NP must rate as one of Yorkshire's least known national distribution of this rare spider north and east by approximately 140 km from its nearest English location at Kinder Scout in the High Peak (VC 57: Derbyshire), which dates back to May 1980. The record highlights the value of surveying these isolated and infrequently studied

landscapes and poses the question whether this Endangered linyphiid is present elsewhere in Yorkshire's water-logged *Sphagnum* mires such as those present within the Yorkshire Dales NP, the sliver of the Peak District NP within the county, and the three relevant Areas of Outstanding Natural Beauty: Nidderdale, Forest of Bowland and North Pennines.

Wasp Spider *Argiope bruennichi* (Araneidae) VC 61
The Wasp Spider is a large araneid with a distinctive orb-web, supporting a stabilimentum, that is constructed low down in tall vegetation. The spider has been gradually increasing its foothold beyond the south coast, becoming frequent south-east of an imaginary line linking The Wash and Severn estuaries, particularly in the Thames corridor. There are very few scattered records in the English Midlands and so it might have been expected from the southern reaches of VC 63. Instead, the first Yorkshire record is coastal, from Easington, just north of Spurn in late August 2021. The coastal grasslands associated with spurn and potentially further north towards Filey would be worth exploring for this unmistakeable spider. Inland, it might be expected on roadside verges, or wherever taller grasses capable of supporting the web occur.

Zoropsis spinimana (Zoropsidae) VC 62
This is a non-native relatively large arachnid first reported in Britain in February 2012 from central London (Harvey, 2012). It is now established in and around the capital, with scattered records submitted from locations as far west near Shepton Mallet in Somerset, and north to Lincoln. In Yorkshire, an individual was photographed from a garden centre just north of York in July 2022, which represents a new spider family for the county and the second most northerly record in Britain to date after Blyth in Northumberland (VC 67).

Micaria pulicaria *s.s.* (Gnaphosidae) VC 64, VC 61
A specimen collected from Adel Moor in Leeds by me in April 2020 represents the first modern record for this species in the strict sense. A further record from Skipwith Common SSSI in July 2022 represents the second Yorkshire and first VC 61 record. This is very probably a widespread species and most, if not all, the records for the aggregate are likely to be *pulicaria*. *Micaria micans* has yet to be recorded in Yorkshire.

Ozyptila sanctuaria (Thomisidae) VC 61
This small crab-spider is typically associated with open habitats, and especially dry grasslands. Jim Pewtress recorded two males by sweeping them from vegetation in a business park just outside Hull on the 5th August 2021.

Sibianor larae (Salticidae) VC 63
A separate article describing the discovery of this recent addition to the British list has been written elsewhere (Wilson, 2023). In summary, this jumping-spider was first recorded from the Thorne Moors SSSI sector of the Humberhead Peatlands National Nature Reserve (NNR) on the 28th June 2021 (Figure 6, p142). Its sister taxon, *Sibianor aurocinctus* has been recorded from the Hatfield Moors SSSI sector of the NNR (Wilson, 2000), which for reasons explained in Wilson (2023) is likely to be *larae*. Follow-up work in 2022 has confirmed this species within the Lindholme area at Hatfield Moors SSSI. Whilst it cannot be certain, it is very likely that the 2000 record of *Sibianor aurocinctus* was *larae*. Therefore *S. aurocinctus* is deleted from the Yorkshire list.

Figure 6: *Sibianor larae* collected from Cottage Dike, Thorne Moors in July 2021.
Photo: Martin Warne

A further 19 species, though previously recorded in Yorkshire, were noted for the first time in one or more Yorkshire vice-counties and these are listed in Table 2. For some species such as the money-spider *Pocadicnemis juncea* and the orb-web spider *Araneus quadratus*, their addition to the VC 65 list reflects the relative lack of recording in Yorkshire's north-west. A family holiday during the Leeds school half-term at the end of May and early June 2022 and based near Sedbergh allowed for some forays in hitherto under-recorded locations in the north-western sector of the Yorkshire Dales NP including upper Swaledale, Garsdale and Rydale.

In my previous review covering the period 2017 – 2019 (Wilson, 2020), I presented an overview of each vice-county's total species-richness and for the county as a whole. Following detailed work in preparing the forthcoming *Atlas*, several errors were identified which I hadn't previously been aware of. For example, the database I use (MapMate) has counted some species twice owing to spelling errors. Consequently, the totals presented were incorrect. Table 2 presents the corrected species totals for each vice-county based on revised and accurate totals to the end of 2019, and for the sake of completeness, the original inaccurate totals as in Wilson (2020). The additions for each vice-county for the period 2020 – 2022 are thus conveyed and for most vice-counties, it is a straightforward addition to present the new and accurate species-richness. as follows. For VC 63, *Sibianor aurocinctus* has been deleted from the list as on the balance of probability, the 2000 record from Hatfield Moors SSSI was likely S. larae. contribute to the new overall total. The combined explanation explains the total numb

Therefore, the total of 372 species is derived from the seven additional species recorded, less the removal of *S. aurocinctus*. For VC 64, *Micaria pulicaria s.l.* contributed to the corrected total of 345 species to the end of 2019. The record of *M. pulicaria s.s.* in 2020 is included in the total of seven additions for the period 2020 – 2022, but to avoid double-counting, it does not contribute to the overall total. In conclusion, this means the total number of species recorded in Yorkshire are 433, i.e. the ten additional taxa recoded, less the removal of *S. aurocinctus* and not double-counting *pulicaria s.l.* and *pulicaria s.s.*

Table 1: New Yorkshire vice-county records and year of first observation.

Family	Species	Conservation Status	VC 61	VC 62	VC 63	VC 64	VC 65
Theridiidae	*Parasteatoda lunata*		2020			2022	2021
Theridiidae	*Parasteatoda simulans*			2021		2022	
Linyphiidae	*Gonatium rubellum*						2021
Linyphiidae	*Pocadicnemis juncea*						2022
Linyphiidae	*Trichopternoides thorelli*				2022		2022
Linyphiidae	*Styloctetor compar*	Nationally Scarce		2020			
Linyphiidae	*Collinsia inerrans*					2020	2022
Linyphiidae	*Agyneta ramosa*						2022
Linyphiidae	*Agyneta mossica*						2022
Linyphiidae	*Agyneta affinis*		2022				
Tetragnathidae	*Tetragnatha pinicola*						2022
Araneidae	*Araneus quadratus*						2022
Araneidae	*Cyclosa conica*						2021
Agelenidae	*Textrix denticulata*		2021				
Agelenidae	*Tegenaria ferruginea*				2022		
Dictynidae	*Nigma walckenaeri*			2021	2021	2021	
Phrurolithidae	*Phrurolithus festivus*		2020				
Clubionidae	*Clubiona pallidula*						2020
Philodromidae	*Rhysodromus fallax*	VU; Nationally Rare; SoPI	2021				
Salticidae	*Marpissa muscosa*	Nationally Scarce				2021	

Table 2: Number of species recorded in each vice-county and Yorkshire to end of 2022.

	VC 61	VC 62	VC 63	VC 64	VC 65	Yorkshire
Species List to 2019 (Wilson, 2020)	327	370	367	350	227	436
Corrected list to 2019	327	362	366	345	227	426
Additions in 2020 to 2022	8	7	7	7	11	10
Total species	**335**	**369**	**372**	**351**	**238**	**434**

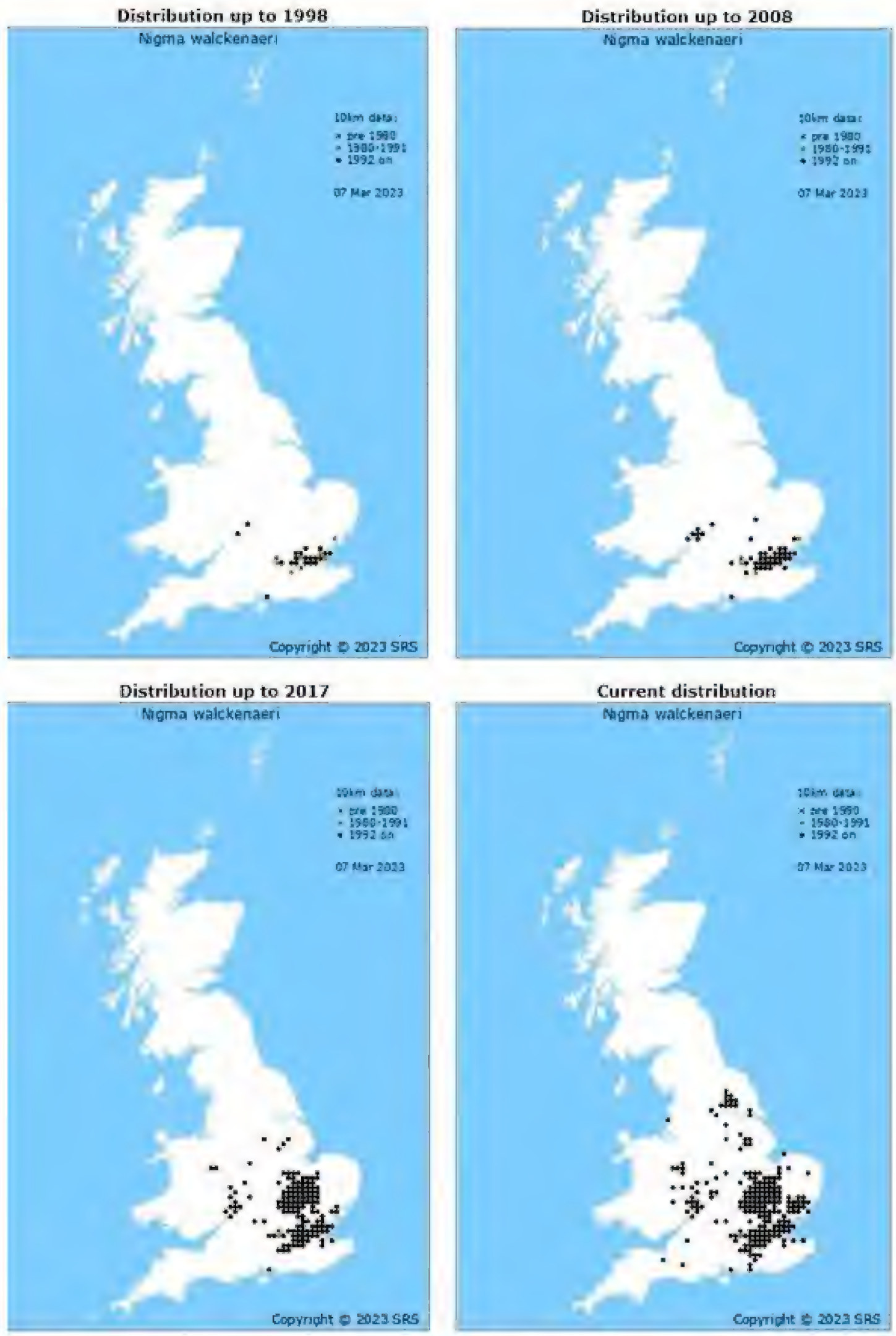


Figure 7. The advance of *Nigma walckenaeri* **across Britain 1998-2022.**

A rapid expansion

A species that has gained rapid traction in Yorkshire is the small dictynid *Nigma walckenaeri* (See front cover). As I wrote in the last review, the first Yorkshire record was in October 2018 where an individual male was discovered on a motorcycle cover at Full Sutton, just east of York (VC 61), details conveyed in Allen (2019). The spider has continued to spread with Oxford and Pewtress (2021) describing the situation up to October 2021. In the three years since the Full Sutton record, the spider had been recorded by Geoff, or reported to the SRS, from 16 additional tetrads (9 hectads). A further year of recording and the spider has now been recorded from 24 tetrads and is now present in all vice-counties of Yorkshire except VC 65 (Figure 5, p139). This spread is mirrored nationally as illustrated in Figure 7 where the rapid expansion seems to have commenced in the second decade of this century.

Recorders are encouraged to check out evergreen shrubs such as Ivy (*Hedera helix*), Garden Privet (*Ligustrum ovalifolium*), Wild Privet (*Ligustrum vulgare*) and horticultural plants with similar leaf structure. It is likely to be present in many urban areas having been recorded in Doncaster, Leeds, York and Hull. Particular attention in more rural environments would be of interest to determine if it is solely present in conurbations where the heat island effect may be influencing the spider's distribution, or is it able to spread beyond the confines of the urban sprawl?

Acknowledgements

I'd like to thank all who have submitted records to the recording scheme including the numerous individuals not mentioned in the main text. Thanks is offered to Tim Jonas who has been particularly diligent in recording spiders and harvestmen in the Wakefield area; Jim Pewtress and Geoff Oxford whose continued efforts, particularly in VC 61 and VC 62, yield new records; Helen R. Kirk (Thorne and Hatfield Moors Conservation Forum) for organising field work on the Humberhead Peatlands NNR; and my family who have continued to support my recording efforts, especially during a week in north-west Yorkshire exploring under-recorded dales in the eponymous National Park.

References

Allen, D. (2019) First record of the dictynid spider *Nigma walckenaeri* (Roewer, 1951) in Yorkshire. *Spider Recording Scheme News No. 93*, in *Newsletter of the British Arachnological Society*, 144: 29 – 30

Harvey, P. (2012) *Zoropsis spinimana* (Dufour,1820) established indoors in Britain. *Spider Recording Scheme News* 74: 20 - 21.

IUCN. (2022) *Guidelines for Using the IUCN Red List Categories and Criteria*. Version 15.1 (July 2022). Prepared by the Standards and Petitions Committee of the IUCN Species Survival Commission. Downloadable from https://www.iucnredlist.org/documents/RedListGuidelines.pdf

Oxford, G. and Pewtress, J. (2021) Populations of the Labyrinth Spider *Agelena labyrinthica* (Agelenidae), the Green Meshweb Spider *Nigma walckenaeri* (Dictynidae), *Parasteatoda simulans* and *P. lunata* (Theridiidae) established in central Yorkshire. *Newsletter of the British Arachnological Society*, 152: 6 – 9

Smith, C.J. (1982) *Atlas of Yorkshire Spiders*. Privately published.

SRS. (2023) *Spider and Harvestman Recording Scheme website*. https://srs.britishspiders.org.uk/portal.php, accessed in March 2023

Wilson, R. (2000) *Bianor aurocinctus* (Araneae: Salticidae) captured at Hatfield Moors SSSI, Yorkshire. *Spider Recording Scheme News*, 38: 3

Wilson, R. (2011a) The status of spider recording in Watsonian Yorkshire. *Spider Recording Scheme News*, 69: 12 – 16.

Wilson, R. (2011b) Some recent spider records from Watsonian Yorkshire (2007-2010). *Spider Recording Scheme News*, 69: 17 – 18. I

Wilson, R. (2014) Notable spiders recorded in Yorkshire in 2013. *Spider Recording Scheme News* 79: 17 – 19.

Wilson, R. (2017) Some recent spider records from Watsonian Yorkshire (2014-2016). *Spider Recording Scheme News* 87: 12 – 13.

Wilson, R. (2020) Some recent spider records from Watsonian Yorkshire (2017 – 2019). *Spider Recording Scheme News*, 97: 6 - 8.

Wilson, R. (2023) *Sibianor larae* Logunov 2001 (Araneae, Salticidae) confirmed from Yorkshire. *Spider Recording Scheme News* 105: 12 - 15

NB Freely downloadable pdfs of *Spider Recording Scheme News* are available at: https://srs.britishspiders.org.uk/portal.php/p/Spider+Recording+Scheme+News

John Newbould awarded the British Empire Medal

We were delighted to learn that John Newbould has been awarded the British Empire Medal in King Charles III first Birthday Honours List 'for voluntary services to Ecological Surveying and Data Collection'.

John at the YNU Conference in 2011.

John has been a YNU stalwart for many years, playing a very active role in the Union's activities, including a period of several years when he fulfilled the role of both Treasurer and Secretary, certainly no mean feat!

It has been John's enthusiasm and competence in fieldwork, not only as a YNU member in his own right but also for local biological record centres (including that of Dorset where he now lives), local authorities and the National Trust, that have contributed to his award. John was also one of the principal instigators of annual YNU Conferences, which he continued to organise even from a distance when he moved to Dorset. He was made an Honorary Member of the YNU in 2010 and received Honorary Membership of the National Biodiversity Network for his recording role in the voluntary sector, the day after he was elected YNU President in November 2013.

We extend our warmest congratulations to John on his many achievements in the field of biological recording.

The Editorial Board

Yorkshire Heteroptera – Part 4: Cimicomorpha 3 – Miroidea, Miridae – Orthoytylinae and Phylinae

Stuart Foster
128 Lyndale Avenue, Edenthorpe, Doncaster, South Yorkshire DN3 2JX

Introduction

In Britain there are approximately 120 recorded species representing the subfamilies Orthotylinae and Phylinae; at present 100 of these are recorded from Yorkshire. These bugs are generally small and phytophagous or entomophagous, none are horticultural or agricultural pests. Overall, the number of records held by the YNU is insufficient to truly represent current distribution and status.

The following list is the fourth of six parts which represent all currently recorded Yorkshire Heteroptera together with associated Vice Counties, statuses, hosts/habitats and years for the first and latest records. The host data are indicative only as some overwinter as adults on evergreen plants, shrubs and trees, while continental food plants may differ from British records, and some are polyphytophagous. Some species can only be identified by dissection of male specimens. Consequently, where the female cannot be reliably identified, or where specimens are unavailable for examination, such records are indicative only and may not have been validated. Several historic records fall into this group.

The status convention is based on: 1 to 9 records = Rare; 10 to 24 = Scarce; 25 to 49 = Uncommon; 50 to 99 = Frequent; 100 to 199 = Common; 200 or more = Very Common.
The taxonomy of European Hemiptera is relatively well documented for many countries (Aukema & Rieger 1999; Aukema, Rieger & Rabitsch 2013). The Bibliography below includes publications which may assist in the identification of specimens.

Infraorder: Cimicomorpha
Superfamily: Miroidea
Family: MIRIDAE Hahn, 1833
Subfamily: ORTHOTYLINAE Van Duzee, 1916 (1865)

Tribe: HALTICINI A. Costa, 1853

Orthocephalus coriaceus (Fabricius, 1776) (Figure. 1)

VC62, VC62: rare, yarrow *Achillea millefolium*, tansy *Tanacetum vulgare*, 1970-1990.

Orthocephalus saltator (Hahn, 1835)

VC61, VC62, VC63: uncommon, Compositae, 1937-2021.

Pachytomella parallela (Meyer-Dür, 1843)

VC63, VC65: rare, short grass in upland areas, 1980-2022.

Strongylocoris leucocephalus (Linnaeus, 1758)

VC61, VC62: scarce, common rock rose *Helianthemum nummularium*, harebell *Campanula rotundifolia* and lady's bedstraw *Galium verum*, 1921-2016.

Tribe: ORTHOTYLINI Van Duzee, 1916 (1865)

Figure 1.
Left: ORTHOTYLINAE - HALTICINI
The rare Orthocephalus coriaceus as found pre-1990in VC61 AND vc62

Right: ORTHOTYLINAE - ORTHOTYLINI
The rare *Fieberocapsus flaveolus* found at inkle moor 20 August 1983 in fen, grass tussocks. (see p149)

Blepharidopterus angulatus (Fallén, 1807)

VC61, VC62, VC63, VC64, VC65: very common, predator, deciduous trees, 1921-2022.

Blepharidopterus diaphanus (Kirschbaum, 1856)

VC61, VC63, VC64: scarce, white willow *Salix alba*, 1921-2019.

Brachynotocoris puncticornis Reuter, 1880

VC63: rare, *Fraxinus*, 2022 new to Yorkshire.

Cyllecoris histrionius (Linnaeus, 1767)

VC61, VC62, VC63, VC64, VC65: common, oaks, 1921-2018.

Cyrtorhinus caricis (Fallén, 1807)

VC61, VC62, VC63, VC64, VC65: frequent, at base of sedges and rushes, 1921-2019.

Dryophilocoris (Camarocyphus) flavoquadrimaculatus (De Geer, 1773)

VC61, VC62, VC63, VC64, VC65: common, oaks, 1921-2020.

Fieberocapsus flaveolus (Reuter, 1870) (see FIgure 1)

VC61, VC63, VC64: scarce, base of tussocks of tufted hair grass *Deschampsia cespitosa* in marshes and swamps, 1949-1998.

Globiceps (Kelidocoris) flavomaculatus (Fabricius, 1794)

VC61, VC63: rare, water meadows and woodland margins, 1921-1997.

Globiceps (Kelidocoris) fulvicollis Jakovlev, 1877

VC61: Harden Moor and Allerthorpe, 1921 and 1942 – these records are almost certainly *G. juniperi*

Globiceps (Kelidocoris) juniperi Reuter, 1902

VC61, VC62, VC63: scarce, heathland, 1930-1995.

Heterocordylus genistae (Scopoli, 1763)

VC63, VC64: rare, dyers' greenweed *Genista tinctoria*, 1927-2011.

Heterocordylus tibialis (Hahn, 1833)

VC61, VC62, VC63, VC64: frequent, broom *Cytisus scoparius*, 1930-2022.

Heterotoma planicornis (Pallas, 1772)

V61, VC62, VC63, VC64, VC65: very common, nettles, shrubs and trees, 1921-2022.

Malacocoris chlorizans (Panzer, 1794)

V61, VC62, VC63, VC64, VC65: frequent, deciduous trees, 1921-2020.

Mecomma (Globicellus) dispar (Boheman, 1852)

VC61, VC62, VC63, VC64: scarce, rank vegetation, 1939-2016.

Mecomma ambulans ambulans (Fallén, 1807)

VC61, VC62, VC63, VC64, VC65: very common, rank vegetation, 1921-2020.

Orthotylus (Litocoris) ericetorum ericetorum (Fallén, 1807)

VC61, VC62, VC63, VC64, VC65: frequent, heather *Calluna vulgaris* and cross-leaved heath *Erica tetralix*, 1921-2022.

Orthotylus (Melanotrichus) flavosparsus (C.R. Sahlberg, 1841)

VC61, VC63, VC64: frequent, chenopods, 1953-2022.

Orthotylus (Melanotrichus) moncreaffi (Douglas & Scott, 1874)

VC61: rare, sea purslane *Atriplex portulacoides*, 1953-2016.

Orthotylus (Melanotrichus) rubidus (Puton, 1874)

VC61, rare, glasswort *Salicornia europaea*, 2003-2013.

Orthotylus (Pachylops) adenocarpi adenocarpi (Perris, 1857)

VC61, VC62, VC63, VC64: uncommon, broom, 1930-2019.

Orthotylus (Pachylops) concolor (Kirschbaum, 1856)

VC62, VC63: rare, broom, 1932-2017.

Orthotylus (Pachylops) virescens (Douglas & Scott, 1865)

V61, VC62, VC63, VC64: frequent, broom, 1927-2019.

Orthotylus (Pseudorthotylus) bilineatus (Fallén, 1807)

VC61, VC62, VC63: uncommon, aspen *Populus tremula* and grey poplar *Populus canescens*, 1964-2019.

Orthotylus flavinervis (Kirschbaum, 1856)

VC63: rare, alder *Alnus glutinosa*, 1985-2004.

Orthotylus marginalis Reuter, 1883

VC61, VC62, VC63, VC64, VC65: common, willows, alder, apple *Malus sylvestris*, 1921-2022.

Orthotylus nassatus (Fabricius, 1787)
VC62, VC63, VC64, VC65: scarce, small leaved lime *Tilia cordata*, 1921-2016.
Orthotylus ochrotrichus Fieber, 1864
VC61, VC62, VC63, VC64, VC65: frequent, elm *Ulmus procera*, nettles, 1921-2021.
Orthotylus prasinus (Fallén, 1826)
VC61, VC62, VC63: rare, deciduous trees, 1982-1998 (older records require verification by dissection).
Orthotylus tenellus (Fallén, 1807)
VC61, VC62, VC63, VC64: uncommon, ash, oaks, hazel, 1981-2022.
Orthotylus virens (Fallén, 1807)
VC63, VC64, VC65: rare, bay willow *Salix pentandra*, 1978-1988.
Orthotylus viridinervis (Kirschbaum, 1856)
VC61, VC62, VC63, VC64, VC65: uncommon, Wych elm *Ulmus glabra*, 1921-2013.
Platycranus (Genistocapsus) bicolor (Douglas & Scott, 1868)
VC61, VC62, VC63, VC64: uncommon, gorse *Ulex europaeus*, 1971-2018.
Pseudoloxops coccineus (Meyer-Dür, 1843)
VC61, VC62, VC63: scarce, ash, 1975-2022.

Subfamily: PHYLINAE Douglas & Scott, 1865
Tribe: PILOPHORINI Douglas & Scott, 1876
Pilophorus cinnamopterus (Kirschbaum, 1856)
VC63: rare, Scots pine, 2002-2007.
Pilophorus clavatus (Linnaeus, 1767)
VC63: rare, single record, willows, 2019.
Pilophorus perplexus Douglas & Scott, 1875 (Figure 2)
VC63: rare, oaks and willows, 1996-2022.

Tribe: HALLODAPINI Van Duzee, 1916 (1865)
Hallodapus rufescens (Burmeister, 1835)
VC61, VC62, VC63: rare, on heaths, 1921-1992.

Tribe: PHYLINI Douglas & Scott, 1865
Amblytylus brevicollis Fieber, 1858
VC65: rare, single record, this species is doubtfully British, specimen unavailable for dissection of male genitalia, essential for confirmation, 1980.
Amblytylus nasutus (Kirschbaum, 1856)
VC61, VC62, VC63: frequent, grasses, 1974-2022.
Asciodema obsoleta (Fieber, 1864)
VC61, VC62, VC63, VC64, VC65: frequent, gorse and broom, 1921-2019.
Atractotomus magnicornis (Fallén, 1807)
VC61, VC62, VC63, VC64, VC65: uncommon, spruces, 1921-2019.
Atractotomus mali (Meyer-Dür, 1843)
VC61, VC63, VC64, VC65: uncommon, hawthorn and apple, 1952-2021.
Atractotomus parvulus Reuter, 1878
VC61, VC63: rare, Norway spruce *Picea abies* and Scots pine, 1986-2020.
Brachyarthrum limitatum Fieber, 1858
VC63: rare, aspen poplar, 1976-1995.
Campylomma annulicorne (Signoret, 1865)
VC61, VC63: rare, three sites, osiers and sallows, 2019-2021.

Campylomma verbasci (Meyer-Dür, 1843)
VC63: rare, mullein *Verbascum thapsus*, 1997.
Chlamydatus (Euattus) pulicarius (Fallén, 1807)
VC63: rare, two sites, mugwort and yarrow, 1986-2006
Chlamydatus (Euattus) pullus (Reuter, 1870)
VC61, VC63, VC65: scarce, low growing plants in dry places, 1976-2020.
Chlamydatus (Eurymerocoris) evanescens (Boheman, 1852)
VC61, VC62, VC63: rare, stonecrop *Sedum anglicum*, 2015-2022.
Chlamydatus (Eurymerocoris) wilkinsoni (Douglas & Scott, 1866)
VC62, VC65: rare, short grass in upland areas, 1921-1973.
Chlamydatus saltitans (Fallén, 1807) (Figure 2).
VC61, VC63, VC64: scarce, short grass and lawns, 1967-2022.

Figure 2

Left: PHYLINAE - PILOPHORINI
The rare *Pilophorus perplexus* found at Clay Lane Edenthorpe on 5 August 2013 VC63 on Lime. (see p150).

Right:
PHYLINAE - PYLINI
The scarce *Chlamydatus saltitans* found at Edenthorpe 19 June 2016 VC63 in lawn grass.

Compsidolon (Coniortodes) salicellum (Herrich-Schaeffer, 1841)
VC61, VC62, VC63, VC64, VC65: uncommon, brambles in woodland, 1921-2022.
Conostethus griseus Douglas & Scott, 1870
VC61: rare, saltmarsh grasses, 1975.
Conostethus roseus (Fallén, 1807)
VC62, VC63: rare, short grasses in sparsely vegetated waste land, 1921-2019.
Conostethus venustus venustus (Fieber, 1858)
VC61, VC63: uncommon, recent introduction into Britain, often large populations on fallow arable land, mayweed *Tripleurospermum inodorum* and chamomile *Chamaemelum nobile*, 2010-2021.
Europiella artemisiae (Becker, 1864)
VC61, VC62, VC63, VC65: frequent, mugwort, 1921-2022.
Europiella decolor (Uhler, 1893)
VC61, VC63: scarce, sea wormwood *Artemisia maritima*, 1989-2015.
Harpocera thoracica (Fallén, 1807)
VC61, VC62, VC63, VC64, VC65: common, oaks, 1921-2020.

Hoplomachus thunbergi (Fallén, 1807)

VC61, VC62, VC63, VC64: uncommon, mouse-ear hawkweed *Pilosella officinarum*, 1968-2022.

Lopus decolor decolor (Fallén, 1807)

VC61, VC62, VC63, VC64: common, grasses, 1928-2022.

Macrotylus (Alloeonycha) paykullii (Fallén, 1807)

VC61, VC62, VC63, VC64: uncommon, restharrow *Ononis repens*, 1921-2018.

Macrotylus (Alloeonycha) solitarius (Meyer-Dür, 1843)

VC61, VC62, VC63, VC64: frequent, hedge woundwort *Stachys sylvatica*, 1930-2019.

Megalocoleus molliculus (Fallén, 1807)

VC61, VC62, VC63, VC64: uncommon, yarrow, 1954-2021.

Megalocoleus tanaceti (Fallén, 1807)

VC61, VC62, VC63, VC64: frequent, tansy, 1921-2021.

Oncotylus viridiflavus viridiflavus (Goeze, 1778)

VC61, VC63, VC64: uncommon, hardheads *Centaurea nigra*, 2006-2022.

Orthonotus rufifrons (Fallén, 1807)

VC61, VC62, VC63, VC64, VC65: uncommon, nettle, 1921-2021.

Parapsallus vitellinus (Scholtz, 1847)

VC63: rare, spruces and larch *Larix decidua*, 1981-2003.

Phoenicocoris obscurellus (Fallén, 1829)

VC61, VC62, VC63, VC64: scarce, Scots pine, 1930-2019.

Phylus coryli (Linnaeus, 1758)

VC61, VC62, VC63, VC64, VC65: frequent, hazel, 1931-2022.

Phylus melanocephalus (Linnaeus, 1758)

VC61, VC62, VC63, VC64, VC65: common, oaks, 1921-2020.

Plagiognathus arbustorum arbustorum (Fabricius, 1794)

VC61, VC62, VC63, VC64, VC65: very common, wide variety of hedgerow plants, 1921-2022.

Plagiognathus chrysanthemi (Wolff J.F., 1804)

VC61, VC62, VC63, VC64, VC65: very common, dry waste areas on a variety of plants, 1921-2022.

Plesiodema pinetella (Zetterstedt, 1828)

VC61, VC62, VC63: rare, Scots pine, 1935-2019.

Psallodema fieberi (Douglas & Scott in Fieber, 1864)

VC61, VC63: scarce, Wych elm, 1985-2016.

Psallus (Apocremnus) betuleti betuleti (Fallén, 1826)

VC61, VC62, VC63, VC64, VC65: frequent, silver birch, 1921-2020. Some records may be *Psallus (Apocremnus) montanus* as separation of the two is difficult.

Psallus (Apocremnus) montanus Josifov, 1973

VC63: rare, silver birch and alder *Alnus glutinosa*, 1979-2022.

Psallus (Hylopsallus) assimilis Stichel, 1956

VC61, VC63, VC64: scarce, field maple *Acer campestre*, 1921-2015.

Psallus (Hylopsallus) perrisi (Mulsant & Rey, 1852)

VC61, VC62, VC63, VC64: frequent, oaks, 1960-2017.

Psallus (Hylopsallus) variabilis (Fallén, 1807)

VC61, VC62, VC63, VC64, VC65: scarce, sallows and aspen, 1921-2018.

Psallus (Hylopsallus) wagneri Ossiannilsson, 1953

VC61, VC62, VC63, VC64: scarce, oaks, 1976-1996.

Psallus (Mesopsallus) ambiguus (Fallén, 1807)

VC61, VC62, VC63, VC64, VC65: common, hawthorne, sallows, alder, 1921-2022.

Psallus (Phylidea) quercus (Kirschbaum, 1856)

VC63: rare, oak, 1986-2014.

Psallus (Pityopsallus) luridus Reuter, 1878

VC61, VC63, VC64: scarce, larch, 1971-1987.

Psallus confusus Rieger, 1981

VC61, VC62, VC63, VC64: uncommon, oaks, poplars, aspen, 1978-2014.

Psallus falleni Reuter, 1883

VC61, VC62, VC63, VC64, VC65: frequent, birch, 1921-2021.

Psallus flavellus Stichel, 1933

VC61, VC62, VC63, VC64, VC65: uncommon, ash, 1970-2022.

Psallus haematodes (Gmelin, 1788)

VC61, VC62, VC63, VC64, VC65: frequent, sallows, 1921-2021.

Psallus lepidus Fieber,1858

VC61, VC62, VC63, VC64, VC65: frequent, ash, 1921-2022.

Psallus mollis (Mulsant & Rey, 1852)

VC61, VC63, VC64: rare, oaks, 1921-2016.

Psallus salicis (Kirschbaum, 1856)

VC61, VC62, VC63, VC64, VC65: uncommon, alder, 1932-2015.

Psallus varians varians (Herrich-Scaeffer, 1841)

VC61, VC62, VC63, VC64, VC65: common, oaks, 1921-2022.

Salicarus roseri (Herrich-Schaeffer, 1838)

VC61, VC63, VC64: scarce, sallow and willows, 1974-2021.

Sthenarus rotermundi (Scholtz, 1847)

VC61, VC62, VC63, VC64: uncommon, white and grey poplars, 1961-2022.

Tinicephalus hortulanus (Meyer-Dür, 1843)

VC61, VC62, VC63, VC64, VC65: scarce, common rock rose, 1956-2022.

Tytthus pygmaeus (Zetterstedt, 1838)

VC61, VC62, VC63: scarce, swamps at bases of rushes and grass, marram grass on sandhills, 1983-2018.

Taxonomic Changes since Southwood & Leston (1959) and adopted herein:

Asciodema fieberi (Douglas & Scott) is now *Psallodema fieberi* (Douglas & Scott in Fieber, 1864).
Asciodema obsoletum (Fieber) is now *Asciodema obsoleta* (Fieber, 1864).
Atractotomus mirificus Woodroffe, 1971 now *Atractotomus parvulus* Reuter, 1878 is new to Britain.
Campylomma annulicorne (Signoret, 1865) is new to Britain. Nau B.S. (1978)
Conostethus frisicus Wagner is now *Conostethus griseus* Douglas & Scott, 1870.
Cyllecoris histrionicus (Linnaeus) is now *Cyllecoris histrionius* (Linnaeus, 1767).
Europiella decolor (Uhler, 1893) is new to Britain.
Globiceps cruciatus Reuter Is now *Globiceps (Kelidocoris) fulvicollis* Jakovlev, 1877.
Globiceps salicicola Reuter is now *Globiceps (Kelidocoris) juniperi* Reuter, 1902.
Heterotoma merioptera (scopoli) is now *Heterotoma planicornis* (Pallas, 1772).
Hoplomachus thunbergi (Fallén) is now *Hoplomachus thunbergii* (Fallén, 1807).
Megalocoleus pilosus (Schrank) is now *Megalocoleus tanaceti* (Fallén, 1807).
Neomecomma bilineatus (Fallén) is now *Orthotylus (Pseudorthotylus) bilineatus* (Fallén, 1807).
Orthotylus diaphanous (Kirschbaum) is now *Blepharidopterus diaphanus* (Kirschbaum, 1856).
Pachylops bicolour (Douglas & Scott) is now *Platycranus (Genistocapsus) bicolor* (Douglas & Scott, 1868).
Phylus pallipes Fieber is now *Phylus melanocephalus* (Linnaeus, 1758).
Plagiognathus albipennis (Fallén) is now *Europiella artemisiae* (Becker, 1864).

Plagiognathus vitellinus (Scholtz) is now *Parapsallus vitellinus* (Scholtz, 1847).
Plesiodema pinetellum (Zetterstedt) is now *Plesiodema pinetella* (Zetterstedt, 1828).
Psallus alnicola Douglas & Scott is now *Psallus salicis* (Kirschbaum, 1856).
Psallus diminutus (Kirschbaum) is now *Psallus confusus* Rieger, 1981.
Psallus masseei Woodroffe is now *Psallus mollis* (Mulsant & Rey, 1852).
Psallus obscurellus (Fallén) is now *Phoenicocoris obscurellus* (Fallén, 1829).
Psallus roseus (Fabricius) is now *Psallus haematodes* (Gmelin, 1788).
Psallus salicellus (Herrich-Schaeffer) is now *Compsidolon (Coniortodes) salicellum* (Herrich-Schaeffer, 1841).
Sthenarus roseri (Herrich-Schaeffer) is now *Salicarus roseri* (Herrich-Schaeffer, 1838).

References

Aukema B. & Rieger C. (1999): *Catalogue of the Heteroptera of the Palaearctic Region*, Vol.3. Netherland Entomological Society, Amsterdam.

Aukema B., Rieger C. & Rabitsch W. (2013): *Catalogue of the Heteroptera of the Palaearctic Region, Vol.6 Supplement.* Netherland Entomological Society, Amsterdam.

Bibliography

Dolling W.R. (1999): *Europiella* (Hem., Miridae) in Britain. *Entomologist's Monthly Magazine* 135: 103-106.

Kirby P. (1992): A review of the scarce and threatened Hemiptera of Great Britain, *UK Nature Conservation No.2*. The Joint Nature Conservation Committee, Peterborough.

Matocq A. & Pluot-Sigwalt D. (2012): Révision des Amblytylus et essai de mise au point sur les genres Amblytylus Fieber et Megalocoleus Reuter (Heteroptera: Miridae: Phylinae), *Ann. Soc. Entomol. Fr.* (n.s.), 48 (1-2): 123-154.

Nau B.S. (1978): Two plant bugs new to Britain, *Placochilus seladonicus* (Fall.) and *Campylomma annulicornis* (Sig.) (Heteroptera, Miridae). *Entomologist's Monthly Magazine* 114: 157-159.

Southwood T.R.E. & Leston D. (1959): *Land and Water Bugs of the British Isles*. Warne.

Wagner E. & Webber H.H. (1964) Hétéroptères Miridae. *Faune de France,* 67, Fédération Française des Sociétés de Sciences Naturelles, Paris.

Woodroffe G.E. (1971): An undescribed British *Atractotomus* Fieber (Hem., Miridae), *Entomologist* 104: 265-267.

Note – Currently there are no up-to-date published keys for the identification of all *Psallus* species found in Britain; definitive identification of most species is by dissection of the male genitalia.

A list of some British species and selected photographs can be viewed at: https://www.britishbugs.org.uk/gallery.html

Informative articles on British Heteroptera have been published in Het News and The Hemipterist, available at:
https://www.britishbugs.org.uk/HetNews.html
https://sites.google.com/site/thehemipterist/

Notable records of leaf-mining moths in East Yorkshire, 2021 and 2022

Andy D. Nunn

Hull International Fisheries Institute, School of Natural Sciences, University of Hull, Hull, HU6 7RX, UK. Email: a.d.nunn@hull.ac.uk

Searching for the feeding signs of leaf-mining moth larvae can be extremely addictive and, judging by the number of posts on social media, appears to have increased in popularity in recent years. This has no doubt been facilitated by Ben Smart's excellent guides to finding the early stages of micro-moths (Smart, 2017, 2021) and the ever-improving resources and assistance available on the internet. In East Yorkshire (VC61), we have a much improved understanding of the distributions of many moths than just a decade ago, and some that were apparently scarce are actually relatively common and widespread. Whilst the majority of the common leaf-mining moth species that were absent from the earlier VC61 list have been added (e.g. Nunn, 2015, 2017, 2019, 2021; Nunn & Warrington, 2016), the last 2 years have produced a number of significant records. This article documents my most notable VC61 leaf-mining moth records from 2021 and 2022. The species codes in the systematic list follow Agassiz *et al*. (2013) and subsequent updates.

Nepticulidae

4.012 *Stigmella aceris*. The first VC61 record occurred on 04.x.2022, when I found a vacated mine in a Field Maple *Acer campestre* leaf in Hessle. Field Maple is common there, but I found just a single mine, suggesting that it has only recently arrived in the area. The species was first recorded in Yorkshire, in VC63, in 2021. Norway Maple *Acer platanoides* is also used as a food plant and is widespread, but less common than Field Maple. There are no confusion species and, given its rapid spread further south, I anticipate that it will colonise VC61 fully in the near future.

4.019 *Stigmella viscerella*. The second, third, fourth and fifth VC61 records occurred on 21.x.2021, 04.x.2022, 11.x.2022 and 1.xi.2022, respectively, when I found tenanted mines in English Elm *Ulmus procera* leaves at North Cave Wetlands, Humber Bridge Country Park, in Everingham (with Charles Fletcher) and Cottingham. The first record was from North Cave Wetlands in 2020. This is usually the least common of the elm-mining *Stigmella* species, but the increase in the number of sites and records perhaps suggest that it is becoming more abundant.

4.020 *Stigmella paradoxa*. The third VC61 record occurred on 29.ix.21, when I found vacated mines in Common Hawthorn *Crataegus monogyna* leaves at Hollym Carrs. The first and second records were from an unknown location in 1976 and Winteringham in 2015. There is potential for confusion with *Leucoptera malifoliella*, but differences in the frass patterns should enable identification in most cases. Hawthorn is widespread in VC61, but *S. paradoxa* appears to be relatively scarce as well as under-recorded.

4.022 *Stigmella regiella*. The fourth VC61 record occurred on 16.vii.2022, when I found a tenanted mine in a Common Hawthorn leaf in Hessle. The first, second and third records were from Walkington in 2017, Sledmere in 2018 and North Cave Wetlands in 2020. Hawthorn is widespread and *S. regiella* produces a relatively distinctive mine, so appears to be scarce in VC61.

4.040 *Stigmella assimilella*. The third and fourth VC61 records were seen on 11.x.2022 and 31.x.2022, respectively, when I found vacated mines in Aspen *Populus tremula* leaves in Everingham (with Charles Fletcher) and at Cali Heath. The first and second records were from Allerthorpe Common in 2013 and Hull in 2017. This species appears to be genuinely scarce in VC61, and certainly less common than *Ectoedemia argyropeza* on the same foodplant.

4.068 *Trifurcula immundella*. The second, third and fifth VC61 records occurred on 13.iv.2021, 15.iii.2022 and 11.x.2022, respectively, when I found tenanted mines in Broom *Cytisus scoparius* stems at Allerthorpe Common (twice) and in Everingham (with Charles Fletcher) (Fig. 1a, p159). The first and fourth records were also from Allerthorpe Common, in 1989 and 2022. This is a cryptic species and care needs to be taken to rule out *Leucoptera spartifoliella*, which produces very similar mines (Langmaid *et al.*, 2018).

Bucculatricidae

14.007 *Bucculatrix albedinella*. The sixth, seventh and eighth VC61 records occurred on 21.x.2021, 03.xi.2021 and 11.x.2022, respectively, when I found vacated mines in English Elm leaves at North Cave Wetlands, Humber Bridge Country Park and in Everingham (with Charles Fletcher). The previous records were from an unknown location in 1985, North Ferriby in 2011, Wheldrake in 2011, and Hessle in 2015 and 2016. There are no major confusion species, but the mines are small and could easily be overlooked.

Gracillariidae

15.051 *Phyllonorycter lantanella*. The third, fourth and fifth VC61 records occurred on 03.xi.2021, 02.iv.2022 and 27.xi.2022, respectively, when I found tenanted mines in Wayfaring Tree *Viburnum lantana* leaves at Humber Bridge Country Park and Laurustinus *Viburnum tinus* leaves at garden centres in Woodmansey and Hull. The first and second records were from North Cliffe (village) and Cottingham in 2018. Wayfaring Tree is not common in VC61, but Guelder Rose *Viburnum opulus* and Laurustinus are relatively widespread and sometimes used as larval foodplants, so *P. lantanella* is likely to spread.

15.060 *Phyllonorycter ulicicolella*. The second, third and fourth VC61 records occurred on 15.iii.2020, 24.iii.2022 and 02.vi.2022, respectively, when I found tenanted mines in gorse stems at Allerthorpe Common, Skipwith Common and North Cliffe Wood. The first record was at Skipwith Common in 2004. This species is probably more widespread and common than the records suggest as the mines are cryptic and can be difficult to locate.

15.070 *Phyllonorycter quinqueguttella*. The first VC61 record occurred on 13.ix.2021, when I found tenanted mines in Creeping Willow *Salix repens* leaves at Allerthorpe Common. The species was first recorded in Yorkshire, in VC62, in 1864, but there are few county records. The distribution of the species in Yorkshire is limited by its foodplant, which is largely confined to Allerthorpe Common and Strensall Common. There are no confusion species, although care should be taken to not mistake sallow saplings for Creeping Willow.

15.093 *Phyllocnistis xenia*. The third VC61 record occurred on 24.ix.2021, when I found tenanted mines in White Poplar *Populus alba* leaves in Easington. The previous two records were also from Easington, in 2013 and 2021. This species has been in the county for at least 10 years, but was not recorded away from the far south-east of VC61, despite searching in various locations only a few kilometres to the west, until 2022. There are no confusion species on White Poplar, but care should be taken to not mistake *P. unipunctella* on hybrid poplars for *P. xenia* on Grey Poplar *Populus*

canescens.

Lyonetiidae

21.002 *Lyonetia prunifoliella*. The first Yorkshire record occurred on 07.viii.2022, when I found a tenanted mine in a Blackthorn *Prunus spinosa* leaf in Skidby (VC 61) (Fig. 1b, p159). This was unexpected as, until recently, the species was only found much further south. It was presumed extinct in England until being rediscovered after more than 100 years, and has been spreading in eastern and central counties, with the first Norfolk record occurring in 2017. The mines are distinctive as chains of frass collect in silk on the underside of the leaf, so should not be confused with any of the other Blackthorn-mining species.

Coleophoridae

37.003 *Coleophora limoniella*. The second Yorkshire record of larvae occurred on 24.ix.2021, when I found cases on Common Sea-lavender *Limonium vulgare* at Welwick Saltmarsh (VC61). The species was first recorded in Yorkshire, at the same site, in 2001, but all subsequent records (all from Spurn) are of adults. The larval cases are extremely cryptic and can be very difficult to locate, but the species probably occurs elsewhere on the Humber Estuary.

37.011 *Coleophora badiipennella*. The first VC61 record occurred on 11.x.2022, when I found a larval case on an English Elm leaf in Everingham (with Charles Fletcher). The species was first recorded in Yorkshire, in VC62, in 1859, but the few modern records have all been from the Doncaster area of VC63. Care needs to be taken to distinguish this species from the first case of *C. limosipennella*, but the final case of the latter species is distinctive and substantially larger than that of *C. badiipennella*.

37.019 *Coleophora trigeminella*. The sixth VC61 record occurred on 02.vi.2022, when I found a larval case on a Rowan *Sorbus aucuparia* leaf at North Cliffe Wood. The first, second, third and fifth records were from Tophill Low in 2017 (twice), 2019 and 2021, and the fourth was from Skidby in 2020. The larval foodplants, which include Rowan, Blackthorn, hawthorns and apples, are widespread, but it appears that *C. trigeminella* is relatively scarce in VC61.

37.032 *Coleophora albitarsella*. The second, third, fourth, fifth, sixth, seventh, eighth and ninth VC61 records occurred on 01.x.2021, 08.x.2021, 17.x.2021, 17.x.2021, 22.x.2021, 04.x.2022, 11.x.2022 and 11.x.2022, respectively, when I found larval cases on Ground-ivy *Glechoma hederacea* leaves in Cottingham, Risby, Skidby (two locations), North Cave, Humber Bridge Country Park and Everingham (two locations, with Charles Fletcher). The first record was from Skidby in 2020. My belief is that this species has only recently arrived in VC61, as I have been monitoring various patches of the foodplant for years without success until 2021.

37.090 *Coleophora artemisicolella*. The sixth and eighth VC61 records occurred on 08.ix.2021 and 15.ix.2022, respectively, when I found larval cases on Mugwort *Artemisia vulgaris* seed heads at North Cave Wetlands and the University of Hull. The previous records were from Spurn in 2008, 2010 and 2015, North Cave Wetlands in 2020 and North Cliffe Wood in 2021, and the seventh was from Spurn in 2022. This species is likely more widespread than the few records suggest, but the larval cases are extremely cryptic and can be difficult to locate.

37.108 *Coleophora salicorniae*. The first Yorkshire record of larvae occurred on 15.x.2021, when I found cases on glasswort at Skeffling Saltmarsh (VC61) (Fig. 1c, p159). The species was first recorded in Yorkshire, in VC61, in 1989, but all previous records (virtually all from Spurn) are of adults. This is another cryptic species, but searching for 'grazed' tips, caused by larvae removing a section of

foodplant to construct their cases, can be a useful guide to locating it.

The Coleophoridae family is probably the most under-recorded moth family in VC 61. This is partly because adults of the majority of species can be identified only by dissection, but also due to their cryptic larval cases, constructed from fragments of plant material and/or silk, frequently being difficult to locate. More than 100 *Coleophora* species are on the UK list, of which 77 have been recorded in Yorkshire. Sixty species have been recorded in VC61, compared with 50, 58, 46 and 40, in VCs 62, 63, 64 and 65 respectively,. There are no particularly notable omissions from the VC61 list, but the majority of species have been reported from only a small number of sites and are undoubtedly under-recorded. The distribution maps on the Yorkshire Moths website (https://yorkshiremoths.co.uk/) reveal three species, namely *C. frischella*, *C. potentillae* and *C. kuehnella*, that have been recorded close to, but not in, VC61, and which are likely candidates to colonise or, if already present, be detected in the future.

Coleophora frischella was not recorded in Yorkshire until 2010, at least partly due to confusion with *C. alcyonipennella*, and there are still only five records. However, clovers, the larval foodplants, are widespread and it is likely that *C. frischella* is present in VC61, in addition to the confirmed occurrences in VCs 63-65. Indeed, searching for larvae is probably the most efficient way to record the species, although rearing of the adult would be required to confirm the identification as the cases are indistinguishable from those of *C. mayrella* (Emmet *et al*., 1996). There are eight records of *C. potentillae* in Yorkshire, all from VC63, and the majority are recent. A range of common foodplants, including bramble, are used by the larvae, and it is likely that it occurs somewhere in VC61. There is potential for confusion with *C. violacea*, but subtle differences in the larval cases and, notably, feeding signs exist, with *C. violacea* leaving full-depth holes in leaves and *C. potentillae* puncturing only the lower surface (Emmet *et al*., 1996). *Coleophora kuehnella* has been recorded from VCs 63 and 64, but there are only seven records, of which four date from the nineteenth century. However, the larval foodplants, oaks, are widespread and the three recent records are widely spaced, so it is possible that *C. kuehnella* is present in VC61. The final larval case has a distinctive "pallium" of scales, resembling a bird's dropping or possibly dried fish or reptile skin, and should not be confused with any other species.

Acknowledgements
I would like to thank Harry Beaumont and Charles Fletcher for verifying the identity of scarce and/or difficult species, and Charles Fletcher for checking the record details.

Top: Fig 1a, (see p156). *Trifurcula immundella* in tenanted mines in Broom stems
Left: Fig 1b, (see p157). *Lyonetia prunifoliella* mine on Blackthorn *Prunus spinosa*,
Right: Fig 1c, (see p157). *Coleophora salicorniae* larval case on glasswort *Salicornia* sp.
Images Andy Nunn.

References

Agassiz D.J.L., Beavan S.D. & Heckford R.J. (2013) *Checklist of the Lepidoptera of the British Isles*. Royal Entomological Society.

Emmet A.M., Langmaid J.R., Bland K.P., Corley M.F.V. & Razowski J. (1996) Coleophoridae. In: *The Moths and Butterflies of Great Britain and Ireland, Volume 3* (ed. A.M. Emmet). Harley Books, pp. 126–338.

Langmaid J.R., Palmer S.M. & Young M.R. (2018) *A Field Guide to the Smaller Moths of Great Britain and Ireland*. British Entomological & Natural History Society.

Nunn A.D. (2015) Searching for leafmining moths and bagworms in East Yorkshire. *The Naturalist*, 140, 64–68.

Nunn A.D. (2017) New species of leaf-mining moths and bagworms in East Yorkshire: recent colonists

Nunn A.D. (2021) Notable records of leaf-mining moths in East Yorkshire, 2019 and 2020. *The Naturalist*, 146, 129–134.

Nunn A.D. & Warrington B. (2016) More dots on the map: further records of leafmining moths in East Yorkshire. *The Naturalist*, 141, 101–104.

Smart B. (2017) *Micro-moth Field Tips: a Guide to Finding the Early Stages in Lancashire and Cheshire*. Lancashire & Cheshire Fauna Society.
Smart B. (2021) *Micro-moth Field Tips: a Guide to Finding the Early Stages in Lancashire and Cheshire, Volume 2*. Lancashire & Cheshire Fauna Society.

YNU Calendar 2023

For further details and updates visit the YNU Events Calendar website page (https://www.ynu.org.uk/events/events.

Sep	17	YNU Executive Committee Meeting via Zoom. 19:30-21.30
Oct	21	**YNU AGM Day:** 10:30: Tour of Askham Bog led by Prof. Alastair Fitter 13:15: AGM and Presidential Address at Priory Street Centre, York (for details see p131).
Nov	5	**Entomological Section** AGM, 10:30-15.30, Potteric Carr Education Centre.
	18	**Bryological Section** VC61 Excursion: Allerthorpe Common (note change of date from 7 Oct.) Meet at 10:00 in the car park on Common LAne, grid ref SE752214734. Please contact Tom Blockeel (tblockeel@aol.com) if you plan to attend.

Yorkshire Naturalists' Union

c/o NEYEDC, Unit 7, Hassacarr Close, Dunnington, York, YO19 5SN
Tel: 01904 641631 Email: membership@ynu.org.uk
Website: www.ynu.org.uk
Registered Charity No. 224018

The Naturalist

This publication is issued free to individual members of the Yorkshire Naturalists' Union and to Affiliated Societies. The Editorial Board of *The Naturalist* is currently:

A. Millard, A. Gómez, G. Oxford, P. Simmons,
Assistant Proofreader: **S. Millard**

Notice to contributors

Contributors should indicate whether they wish their manuscripts to be subjected to anonymous peer review. All other manuscripts will be reviewed by the Editorial Board who at their discretion may send them to third parties for comment and advice.

Original articles should be submitted electronically as an MS Word document to Dr A. Millard at:
editor@ynu.org.uk

Please look at a recent issue of the journal for a general idea of how to present your article. Also see *The Naturalist* - *Guidance for authors* at www.ynu.org.uk/naturalist and please **avoid** the following:

- using any paragraph formatting and line spacings other than single.
- using tabs to tabulate information (please use MS Word table format).

Good quality, high resolution images are very welcome and should be sent as .jpg files, with a separate MS Word file containing the caption and name of the person to whom the image should be attributed.

If electronic submission is not possible, contributions should be sent to Dr. A. Millard, Woodland Villas, 86 Bachelor Lane, Horsforth, Leeds LS18 5NF (Tel. 0113 258 2482).

Contributors should ensure the accuracy of reference citations. The Editorial Board and Council accept no responsibility for opinions expressed by contributors.

Copy Dates:
April issue - 14 February; August issue - 14 June; December issue - 14 October

© Yorkshire Naturalists' Union 2023. Single copies may be made of single articles in this journal provided that due acknowledgement is made and the copies are for non-profit making educational or private use. Copying of more than one article or multiple copying of a single article is forbidden unless special permission has been obtained from the Yorkshire Naturalists' Union. Articles submitted for publication in *The Naturalist* may not be submitted to another journal for publication. Permission is granted for the use of brief quotations in published work provided that acknowledgement of the source is clearly stated but the use of substantial sections of text and any illustrative matter requires the express permission of the Yorkshire Naturalists' Union. Authors may place their articles in a university repository provided it is the final published version and that it is embargoed for a full calendar year (e.g. articles published in the April, August or December editions for 2022 may not be accessible until 2024.)

***The Naturalist* is printed by Swallowtail Print, Norwich**

ISSN 0028-0771

Yorkshire Naturalists' Union